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case book

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The studies on which these summaries are based were accomplished by professional consultants under contract to the Area Redevelopment Administration. While ARA assumes no responsibility for the statements and conclusions made, it believes that the problems discussed, and the solutions suggested, may be useful as a direction or indicator of experience to many communities engaged in economic development and redevelopment.

INTRODUCTION

Cultural and Economic Characteristics of the Hopi Tribe

Investigation of the possibilities of commercial tourism on the Hopi Reservation was guided and influenced by the tribe's economic and cultural development. A review of this development included the areas of tribal and Pueblo history, physical environment, government, economy, and future prospects.

The Hopi People Were Settled on Their Reservation by Executive Order in 1882

The Hopis have made their home in northern Arizona for nearly a thousand years, but were granted a reservation of approximately two million six hundred thousand acres by Executive Order in

1882. The reservation is a rectangular shaped area reaching from 110 to 111 degrees west longitude and from 35½ to 36½ degrees north latitude. Exhibit 1 shows this area to be approximately 100 miles west of Gallup, N. M., and 75 miles north of Holbrook, Arizona. The area is largely a high arid plateau rising to 7,000 feet elevation on the Black Mesa to the north. Rainfall is very light, amounting to only 8 to 10 inches annually which supports sparse, coarse vegetation. The reservation country is dissected by numerous mesas and washes giving it a spectacular, rugged appearance. In spite of recent improvements in road conditions, it remains a remote and largely empty region. The most densely populated section of the reservation is along Indian Route 3 where the Hopi Villages are clustered on or near the so-called First, Second and Third Mesas, numbered in order from east to west.



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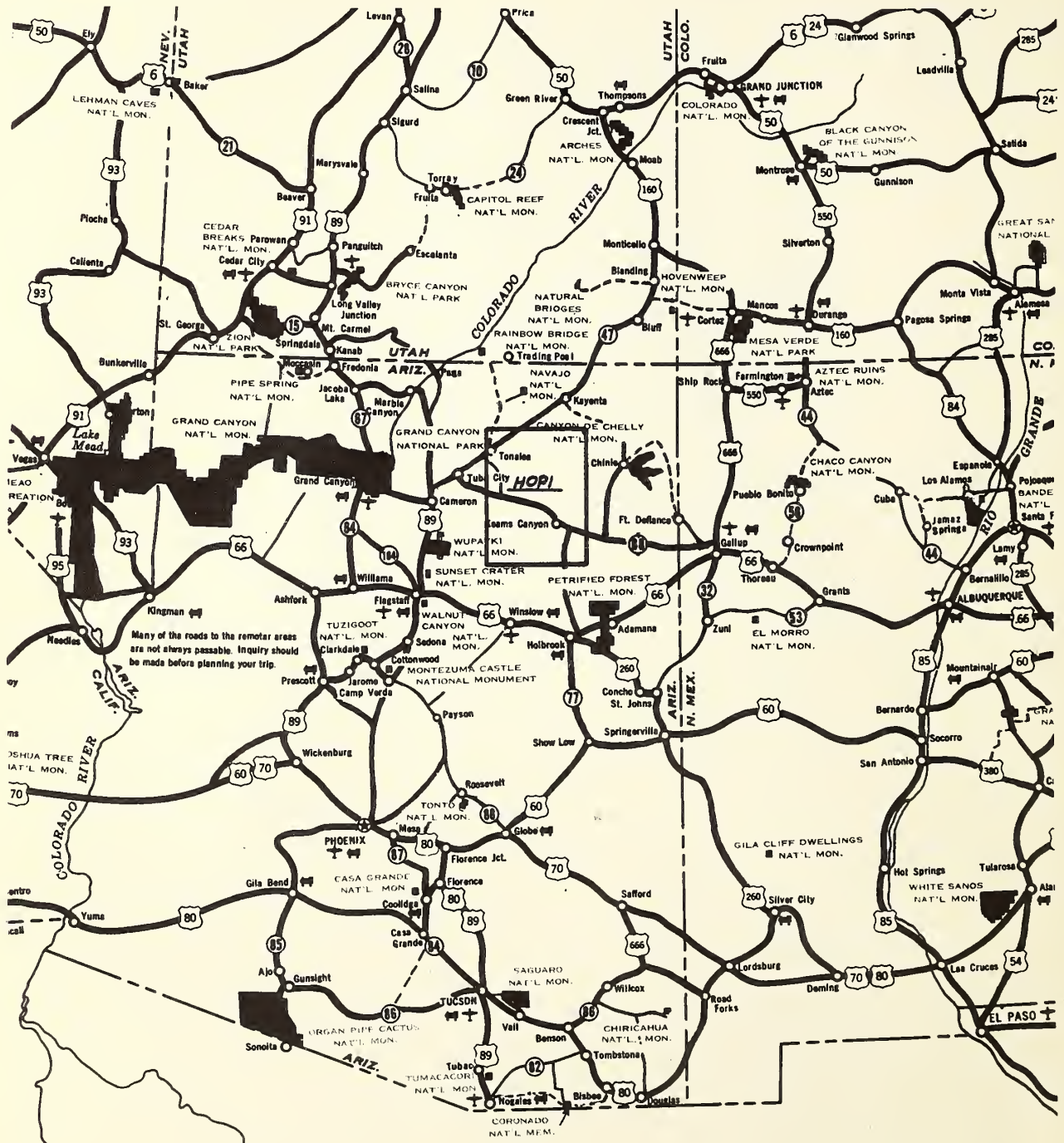
A Survey of TOURIST POTENTIAL and ADEQUACY of WATER SUPPLY for Tourism on the HOPI INDIAN RESERVATION

Armour Research Foundation
Illinois Institute of Technology
Chicago 16, Illinois

This study points up problems of the Hopi Indian Reservation in northern Arizona, including unemployment, lack of entrepreneur ownership, inadequate tourist facilities in an area of historical significance, poor access roads to the reservation, and an inadequate water supply that precludes development of commercial tourism. Findings show that by developing existing water sources a motel complex could be supported. This would generate additional employment in the tribe.

Exhibit 1

THE HOPI RESERVATION LOCATION IN RELATION TO SOUTHWESTERN TOURIST ATTRACTIONS



Source: National Park Service

The Hopi Indians Are the Only Pueblo Tribe in Arizona

The Hopis are descended from ancient Indians known as the Basketmakers, who were the forerunners of the agriculturally oriented pueblo building tribes. The pueblo tribes largely disappeared after prolonged southwestern droughts in the 13th century. There are a few remaining pueblo tribes in New Mexico, but, with the exception of the Hopis, few of them have managed to retain their ancient cultures.

The Hopi Culture and Economy Are Closely Adapted to the Demands of Their Semi-Desert Environment

Water resources are scarce in the territory occupied by the Hopis. In many ways it is remarkable that this region can sustain life at all. However, the Hopi developed dry and flood farming methods many centuries ago which enabled them to raise corn, squash, beans and melons on which they survived. This survival has been so tenuous that it has given rise to the elaborate Hopi religious ceremonies, designed to ensure the success of the crops and to integrate man with all things in nature in this struggle for survival. As a result, Hopi ceremonies and institutions remain intact to a greater extent than those of any other Indian tribe. A philosophy and behavior patterns based on minimizing open conflicts evolved among the Hopis in order to avoid squandering their very limited natural resources.

A Hopi Constitution Authorizing a Tribal Council Was Established in 1936

Various attempts at creating self-government within the tribe culminated in the present constitution. However, a functioning Tribal Council was not brought into existence until 1955 and is still recognized by only a bare majority of village leaders. In many ways it is difficult to speak of a Hopi "Tribe" at all. A weak constitution coupled with narrow representation and tribal assets of about \$5,000 makes the accomplishment of any reservation-wide progress extremely difficult. Fortunately there are a few responsible and progressive leaders who are willing to make the attempt in spite of these limitations.

The Hopi Economy Consists Largely of Subsistence Agriculture and Part-Time Wage Employment

Dry farming of traditional crops, with only primitive implements in many cases, remains a mainstay of Hopi life. Some sheep and cattle raising are carried on, but the available range is seriously overgrazed, since in some areas it can support only one animal per hundred acres. Ground water studies conducted by the U.S. Geologic Survey indicate that the possibility of introducing any sort of irrigation is extremely remote.

Some Hopis are employed on the reservation by the Bureau of Indian Affairs, the U.S. Public Health Service, and private road contractors. However, the majority of wage employment must be obtained

off the reservation in such activities as forest fire fighting, the building trades or heavy construction—all highly seasonal activities. In addition, many Hopis are reluctant to commute the long distances often required, much less consider leaving the familiar surroundings of the reservation. Consequently unemployment was found to be at least 40 percent of the Hopi labor force in a labor survey conducted by the study team. See "Reservation Labor Survey," at the end of this report.

The Hopis are skilled artists and craftsmen. They produce well made silvercraft, basketry and pottery. With some exceptions, work of this type is done on a spare time basis. Hopi arts and crafts are marketed through local traders on the reservation and by other Indian traders and dealers throughout the southwest.

Commercial Coal Deposits and Possibly Oil Exist on the Hopi Reservation

The Hopis were among the first people anywhere to mine and burn coal. Anthropologists believe that they successfully mined coal and used it for firing pottery prior to the time it was first used in Europe. The Hopi coal is a Bituminous "C" of high volatility and medium to high ash content, but can potentially find use for steam power generating plants in northern Arizona.

Thus far the Hopis have granted no exploration permits for oil, although the area has been thoroughly prospected through the use of airborne magnetometers. A number of major oil companies have approached the tribe regarding lease arrangements. The present lack of development in this direction is a consequence of boundary litigation with the Navaho Tribe.

The Hopi and Navaho Tribe Are Involved in an Important Litigation Regarding the Boundaries of the Reservation

The Navaho Reservation completely surrounds the Hopi Reservation. When the Hopi Tribe was granted its lands by Executive Order in 1882, the Federal government reserved the right to settle other Indians in this territory as it saw fit. Since that time, Navahos have settled about two million of the original two million six hundred thousand acres granted to the Hopis. The basic issue in the boundary dispute is whether this settlement was with the active or implied consent of the government or whether it is a trespass. During the course of the study team's field work on the reservation, a special three-judge Federal Court granted full title to the Hopi Tribe of the lands they now occupy and an undivided half interest in the remaining two million acres. The Navaho Tribe has appealed the decision to the U.S. Supreme Court.

The Current Hopi Difficulties Are the Result of a Cultural Impasse

The ancient Hopi society was dynamically balanced with nature, in that man, environment and the Kachina Gods all cooperated to make survival

possible. Often, as the degree of adaptation to an existing environment increases, the ability to adapt to alternative environments tends to decrease accordingly. Thus, the very success of the old "Hopi way" has made the culture highly vulnerable to the intrusion of the twentieth century culture.

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

The study team's major findings, conclusions and recommendations regarding the feasibility of commercial tourism on the Hopi Indian Reservation are presented with a summary of the general Hopi environment, existence of tourist attractions, traffic volume, financial considerations and ability to be implemented.

The Hopi Tribe Is Plagued With High Unemployment, Lack of Capital, and Litigation

The remote location of the Hopi Reservation, combined with its lack of water, has prevented the development of any significant economic activity other than subsistence farming and a small number of jobs with Federal agencies. Unemployment is currently running at 40 percent. Although the area contains potentially valuable natural resources, their exploitation has been inhibited by a boundary dispute with the Navaho Tribe. Consequently the tribe has no significant income and a net worth of only \$5,000.

The comparatively new Tribal Council is not widely supported. Village chiefs and the Hopi religion exert powerful influences on most activities, slowing progress and perpetuating the difficult circumstances of the tribe.

The Hopi Reservation Contains Exploitable Tourist Resources

Two hundred and eighty-four motorists on the reservation and 25 park superintendents, government officials, anthropologists and Hopi officials were interviewed to determine whether the Hopis possessed tourist attractions which could be exploited. The results of this portion of the study are summarized in the following paragraphs.

Eighty-Three Percent of the 284 Motorists Interviewed Were Tourists

Motorists on the reservation were asked how they happened to visit the Hopi Tribe. The results were:

• Non-tourist travel	17%
• Tourist travel	
Casual visit	53%
Response to promotion	14%
Specific interest	16%
	83%
	100%

Reasons given most frequently for selecting Hopiland for a visit included: saving of time and distance to the Grand Canyon, urging from friends, recommended by rangers or travel agents, seen in guide books, and personal interest in Indian culture.

The Most Interesting Feature of the Reservation Is the Indian Way of Life

Tourists were asked what they found to be most interesting during their trip through the reservation. Responses were:

• Physical attractions	34%
• Culture and way of life	44%
• Indefinite	22%

Physical attractions included the scenery and the geology of the area. Villages, farms, arts and crafts, people and ceremonies were mentioned with respect to culture and way of life. Fourteen percent of the tourists interviewed indicated an interest in all of the categories mentioned above and 8 percent found nothing about the Hopis of particular interest.

Personal Interviews with Authorities on Tourism Indicate that Hopi Arts, Crafts and Ceremonies Are Important Aspects of Southwestern Lore

Interviews with park superintendents and anthropologists indicated that a number of Hopi attractions have been well known for many years. The Snake Dances are world famous. This one ceremony attracted over 3,000 visitors last year.

The artistic themes expressed in Hopi arts and crafts are also found in advertising and interior design. Maps, literature, and photographs featuring Hopi life are widely available in the southwest.

The Hopi Tourist Attractions Are Not Well Developed

Official Bureau of Indian Affairs publications state that "tourism has not developed due to lack of encouragement by the tribe." A general lack of accommodations and amenities discourages many people from making the trip through the reservation.

The restoration of historic ruins has been neglected, while attendance at pueblo ruins in other parts of the southwest is growing at the rate of 10 percent annually with total attendance of 950,000 people in 1961. Other Hopi attractions are poorly marked and no concerted promotional efforts are applied.

The Hopi Reservation Is Well Situated With Respect To Major Tourist Markets But Is Not Participating In Their Benefits

Exhibit 1 shows the position of the Hopi reservation in relation to leading southwestern tourist attractions. Indian Route 3 through the Hopi Reservation is the shortest distance from Gallup, New Mexico, to both the north and south rims of the

Grand Canyon and the southern Utah Parks of Zion and Bryce Canyon. Distances to these points are:

	Via U.S. 66	Via Indian 3 (Hopi Reservation)
Gallup to the Grand Canyon (N)	392 miles	326 miles
Gallup to the Grand Canyon (S)	266 miles	259 miles
Gallup to Page, Arizona (leading to Utah parks)	320 miles	253 miles

The distance to the north rim is 17 percent shorter and to Page on the Utah State line 21 percent shorter. Distance to the south rim of Grand Canyon is only 3 percent shorter using the reservation route. However, while 10,000 cars per day were traveling over Route 66, which is 75 miles south of the reservation, and nearly 2,000 a day were entering and leaving the Grand Canyon, only 90 tourist vehicles a day were using the reservation route during a traffic survey in August, 1962.

The Grand Canyon dominates northern Arizona tourism so that its visitor patterns can be expected to prevail on the Hopi Reservation. Ninety tourist vehicles a day passed through the reservation during the conduct of the traffic survey or 2,790 for the month. Of the total Grand Canyon visits, 18.7 percent of them are in August. Thus, if 2,790 visits to the reservation during August represents a similar percent of the total, annual reservation visits would approach 15,000 vehicles. However, the majority of these visitors are merely driving through the reservation and therefore make no contribution to the Hopi economy.

The Grand Canyon Traffic Would Supply The Largest Number Of Reservation Tourists

The Grand Canyon, the greatest tourist attraction in the United States, was host to over a million visitors in 1961. The prevailing patterns of this travel are favorable to the development of tourism on the Hopi Reservation.

Forty-six percent of the visitors to the south rim arrive via Route 66 from the east, thus passing the reservation, and 34 percent of those at the Park departed eastward on Route 66. Total visitor cars at the south rim in 1961 came to 300,500.

At the north rim, 9 percent of those going to the Park passed the reservation on Route 66 and 24 percent of those leaving the Park likewise traveled Route 66. North rim visits totaled 47,327 in 1961. With the study team's tourism recommendations in effect, 7 percent of the Grand Canyon traffic or 25,000 vehicles annually can pass through the reservation. This contrasts with a present Hopi share of this traffic of 1.6 percent.

EXHIBIT 2 PROJECTED HOPI TOURIST VOLUME (VEHICLES)									
Month	Grand Canyon South Rim	Grand Canyon North Rim	Grand Canyon Intrastate	Arizona Others	All Others	Total	Total Predicted Daily Avg.	Current Daily Avg.	
Jan.	576	..	270	210	210	1,056	34	11	
Feb.	600	..	294	220	220	1,114	40	13	
March	1,000	..	478	295	295	1,773	57	19	
April	1,354	..	637	360	360	2,351	78	27	
May	1,730	159	930	543	543	3,362	108	36	
June	3,760	552	2,102	1,427	1,427	7,841	261	86	
July	4,260	692	2,450	1,710	1,710	9,112	294	95	
Aug.	3,940	705	2,295	1,658	1,658	8,598	277	90	
Sept.	2,160	434	1,288	971	971	4,853	162	52	
Oct.	1,560	148	820	486	486	3,014	97	22	
Nov.	770	..	368	250	250	1,388	46	15	
Dec.	520	..	318	230	230	1,068	34	11	
	22,230	2,690	12,250	8,360	8,360	45,530	Total Vehicles		

Source: National Park Service, Arizona Highway Department. Computation and assignment of traffic to Reservation routes by Management Research Division, Armour Research Foundation.

EXHIBIT 3
SEASONAL INFLUENCE
NORTHERN ARIZONA TOURISM

Place (% Total)	Winter	Spring	Summer	Total
Canyon De Chelly	9%	21%	59%	11%
Grand Canyon	9%	14%	65%	12%
Petrified Forest	9%	13%	69%	9%
Route 66	13%	22%	54%	11%
Place (Seasonal Factor)				
Canyon De Chelly	1.0	2.34	6.55	1.22
Grand Canyon	1.0	1.55	7.22	1.33
Petrified Forest	1.0	1.45	7.67	1.0
Route 66	1.0	1.70	4.15	0.85

Definition of Seasons

Winter	Nov. 30–March 15
Spring	March 16–May 24
Summer	May 25–Sept. 27
Fall	Sept. 28–Nov. 29

The seasonal factor is obtained by setting winter equal to one and dividing the winter percent of total into percent total for other seasons.

Source: Park Superintendents, Arizona Highway Department. Developed by Management Research Division, Armour Research Foundation.

Arizona Intrastate Tourism and Other Types of Through Traffic Could Bring Reservation Visits to 45,000 Vehicles or 148,000 Persons Annually

The rapid growth of population in Arizona and the popularity of such nearby attractions as Canyon de Chelly with 73 percent of its visitors from Arizona, California and New Mexico could add another 20,500 vehicles to the 25,000 from the Grand Canyon. Exhibit 2 summarizes the traffic contribution to reservation tourism from each source.

Arizona Tourism Is Highly Seasonal

Exhibit 3 indicates the annual variation in tourist travel at four selected locations in northern Arizona. The movement from the winter to the summer season is approximately 700 percent in the case of the Petrified Forest.

When A Traffic Volume Of 45,500 Vehicles Annually Is Achieved, It Is Estimated That Tourists Will Spend \$424,000 Per Year On The Hopi Reservation

Average daily expenditures of tourists in the Hopi traffic survey agreed well with similar figures from seven western States. Reservation tourists reported average expenditures of \$26.70 per day per car party or \$8.10 per person where car occupancy was 3.3 persons.

Analysis of visitor patterns at nearby attractions, comparisons with other studies and estimates based on tourist interests and spending habits indicate that:

- 20 percent of reservation tourists will want accommodations,

- 48 percent of visitors will require meals,
- 80 percent of motorists will purchase gasoline, and
- 40 percent of tourists will spend for arts, crafts, and tours.

Utilizing typical local prices and estimated expenditures, the total available reservation tourist income was calculated as follows:

<i>Motel:</i> 20 percent of 45,500 cars	
@ \$10.00 per night	\$ 91,000
<i>Restaurant:</i> 20 percent of 45,500 cars	
two meals at a total of \$2.50 and 28 percent of 45,500 cars one meal per person at \$1.50 (3.3 persons per car)	138,000
<i>Gasoline:</i> 80 percent of 45,500 cars	
8 gallons at 35¢ per gallon	102,000
<i>Arts, crafts and tours:</i> 40 percent of 45,500 cars at \$5.00 per car	93,000
	<u>\$424,000</u>

A Program Of Promotional Activities And Facilities Development Is Recommended

To attract 45,000 annually and exploit a \$424,000 tourist potential, a program of promotional activities and facilities development is necessary. Tourists should be told about the reservation and encouraged to come there through the provision of signs, literature, and knowledge about the Hopis and their attractions.

Too many people, for lack of information, are merely driving through the reservation without stopping. The establishment of visitor centers in Keams Canyon and Oriabi combined with parking areas and historical markers in the First and Second Mesa areas will provide information and an opportunity for the employment of guides. Also, tourists should be encouraged to remain as long as possible. The organization of longer tours, riding trips, and visits to the Hopi ceremonies will encourage visitors to remain for longer periods of time.

Motel and Restaurant Facilities Should Be Developed

Present motel and restaurant accommodations are inadequate. New motel and restaurant facilities should be constructed on the Second Mesa or in Keams Canyon. The mesa is more centrally located and more aesthetic, but Keams Canyon has supporting facilities.

The Feasibility of Motels of Various Sizes Was Examined

The national average construction cost for motels with restaurants is \$10,000 per unit and \$8,000 per unit without restaurants. Exhibit 4 compares the profitability of various size motels at three traffic volumes. No operation exceeding 20 units would be profitable at this time.

EXHIBIT 4
MOTEL-RESTAURANT OPERATING PROJECTIONS

<u>Number of Units</u>	<u>60</u>	<u>50</u>	<u>40</u>	<u>30</u>	<u>20</u>	<u>10</u>
<u>% Capacity</u> <u>1962 Traffic</u>	<u>13.9</u>	<u>16.6</u>	<u>20.8</u>	<u>27.8</u>	<u>41.7</u>	<u>60.4</u>
Room sales	....	....	....	\$ 30,400	\$ 30,400	\$ 22,000
Restaurant sales	....	....	....	46,000	46,000	23,000
Total				\$ 76,400	\$ 76,400	\$ 45,000
Room profit (L)				\$ (10,000)	\$ (1,500)	\$ 2,600
Restaurant profit (L)				3,600	3,600	1,800
Total (L)	....	....	....	\$ (6,400)	\$ 1,100	\$ 4,400
<u>% Capacity</u> <u>2 x 1962 Traffic</u>	<u>20.5</u>	<u>24.6</u>	<u>30.7</u>	<u>40.9</u>	<u>52.0</u>	<u>73.8</u>
Room sales	....	....	\$ 44,900	\$ 44,900	\$ 37,900	\$ 26,900
Restaurant sales	....	....	69,000	69,000	46,000	23,000
Total			\$113,900	\$113,900	\$ 83,900	\$ 49,900
Room profit (L)	....	....	\$ (11,000)	\$ (2,700)	\$ 2,300	\$ 5,000
Restaurant profit (L)			5,400	5,400	3,600	1,800
Total profit (L)			\$ (5,600)	\$ 2,700	\$ 5,900	\$ 6,800
<u>% Capacity</u> <u>3 x 1962 Traffic</u>	<u>41.4</u>	<u>46.7</u>	<u>52.2</u>	<u>60.6</u>	<u>74.0</u>	<u>92.3</u>
Room sales	\$ 90,700	\$ 85,200	\$ 76,200	\$ 66,300	\$ 54,000	\$ 33,700
Restaurant sales	138,000	115,000	92,000	69,000	46,000	23,000
Total	\$228,700	\$200,200	\$168,200	\$135,300	\$100,000	\$ 56,700
Room profit (L)	\$ (4,700)	\$ 0000	\$ 4,600	\$ 7,900	\$ 10,300	\$ 8,400
Restaurant profit (L)	10,700	8,900	7,200	5,400	3,600	1,800
Total profit (L)	\$ 6,000	\$ 8,900	\$ 11,800	\$ 13,300	\$ 13,900	\$ 10,200
Room charge \$10.00/night						
Variable costs 50% of sales						
Fixed costs 23% of sales at full capacity						
Restaurant profit 7.8%						
Source: Management Research, Armour Research Foundation						

A Thirty-Unit Motel with Restaurant Would Be a Worthwhile Speculation

A 30-unit motel would be in the black at twice the present level of 15,000 vehicles a year traffic. On the assumption it would take three years to reach a level of 45,000 vehicles annually, the enterprise would recover its losses at the end of the third year. At 45,000 vehicles annually all motels up to 60 units would be profitable although the restaurant would be the contributing factor for profitable 50 and 60-unit developments.

Motel Water Requirements for the Tourist Complex Are Within the Capability of Good Wells Drilled in the Navaho Sandstone

Water is a critical problem throughout the Hopi Reservation. However, wells in the Navaho Sandstone are usually the best producers in the area and have the better water. A 40 GPM well in this structure exists four miles to the east of the prospective motel site. A well of this capacity will produce 57,600 gallons per day against a motel-restaurant

requirement of 9,150 gallons per day for a 30-unit development. A storage of 20,000 gallons is recommended to provide fire protection and to hedge against pump or power failure. A well with a casing diameter of at least 12 inches bored to a depth of 1,500 feet will be required. The cost of the system will be in the neighborhood of \$50,000.

The Tribe Should Seek National Monument Status for the Awatovi Ruin

The excavated ruin of Awatovi should be preserved and developed by the Department of Interior as a national monument. This would make possible the improvement of the road to the site and the development of a museum as well as prospects for the creation of a Hopi Ranger Service.

Entrepreneur Ownership of Tourism Facilities Is Recommended

The Hopi Tribe has a net worth of about \$5,000 and little or no business organization. Assuming

the tribe could borrow the necessary funds to develop a motel-restaurant complex, they would have so little equity that mortgage and interest requirements could drain away working capital at any time.

PLAN OF ACTION

How the Hopi Tribe can organize to develop and promote its tourism resources, and specific steps to be taken over the next several years by the Tribal Council are suggested.

The Tribal Council and Economic Development Committee Must Develop Broad Support for a Tourism Program

In view of the lack of assets available for the development of tourism, utmost cooperation within the tribe to proceed with the recommended program must be obtained. It is recognized that conservative elements within the tribe are likely to furnish opposition to commercial tourism. Consent must be obtained to acquire the necessary land for the project and steps will have to be taken to encourage tourists to visit the villages. The Tribal Council and members of the Economic Development Committee will have to sell the merits of the tourism program to village leaders and individual Hopis so that any vote to implement the program will have the highest probability of success. Individual reservation businessmen and traders should be encouraged to cooperate and participate in the development program. Creating the necessary tribal support may require considerable time.

A Broad Promotional Program Encouraging Reservation Tourism Should Be Instituted

There are many sources of inexpensive publicity available to the Hopi Tribe which can be used to publicize the fact that the Hopis have attractions, and tourists are welcome.

Newspapers, Magazines and Travel Agencies Can Be Reached Through a Direct Mail Program

Magazines and newspapers are constantly searching for new material. Articles are written annually on the Grand Canyon, Route 66, and the various rodeos, tribal fairs and related aspects of southwestern life. Letters to the editors of national magazines and newspapers should be written by the tribe, inviting them to visit the reservation and highlighting its attractions. These people can be invited singly or in groups and should be given every opportunity and encouragement to collect material for articles about the Hopis.

Travel agencies, particularly national organizations such as the AAA, American Express Company, and Fred Harvey, need to be informed about the tribe's interest in promoting tourism. Directories of travel associations and individual agents can be

obtained and a continuing program of contact by mail should be established.

The Hopi Tribe Should Participate in the Programs of Arizona Organizations Promoting Tourism

The Arizona Development Board, The Northlands Association, Route 66 Association, and the Highway 180 Association all have a vested interest in northern Arizona tourism. These groups hold a number of annual meetings and seminars on improving and expanding the travel industry in the State. Hopi membership and participation in these organizations is strongly suggested. Not only will the tribe be able to increase its knowledge of the tourism business, but there is the opportunity to meet and contact individuals who can be of direct assistance to the tribe's tourism program. The Arizona Development Board sponsors national advertising featuring the various attractions in the State and, although material on the Hopis appears from time to time, the tribe should make it known that it wishes to increase its participation.

Signs and Pamphlets Describing the Reservation Tourist Attractions Are Required

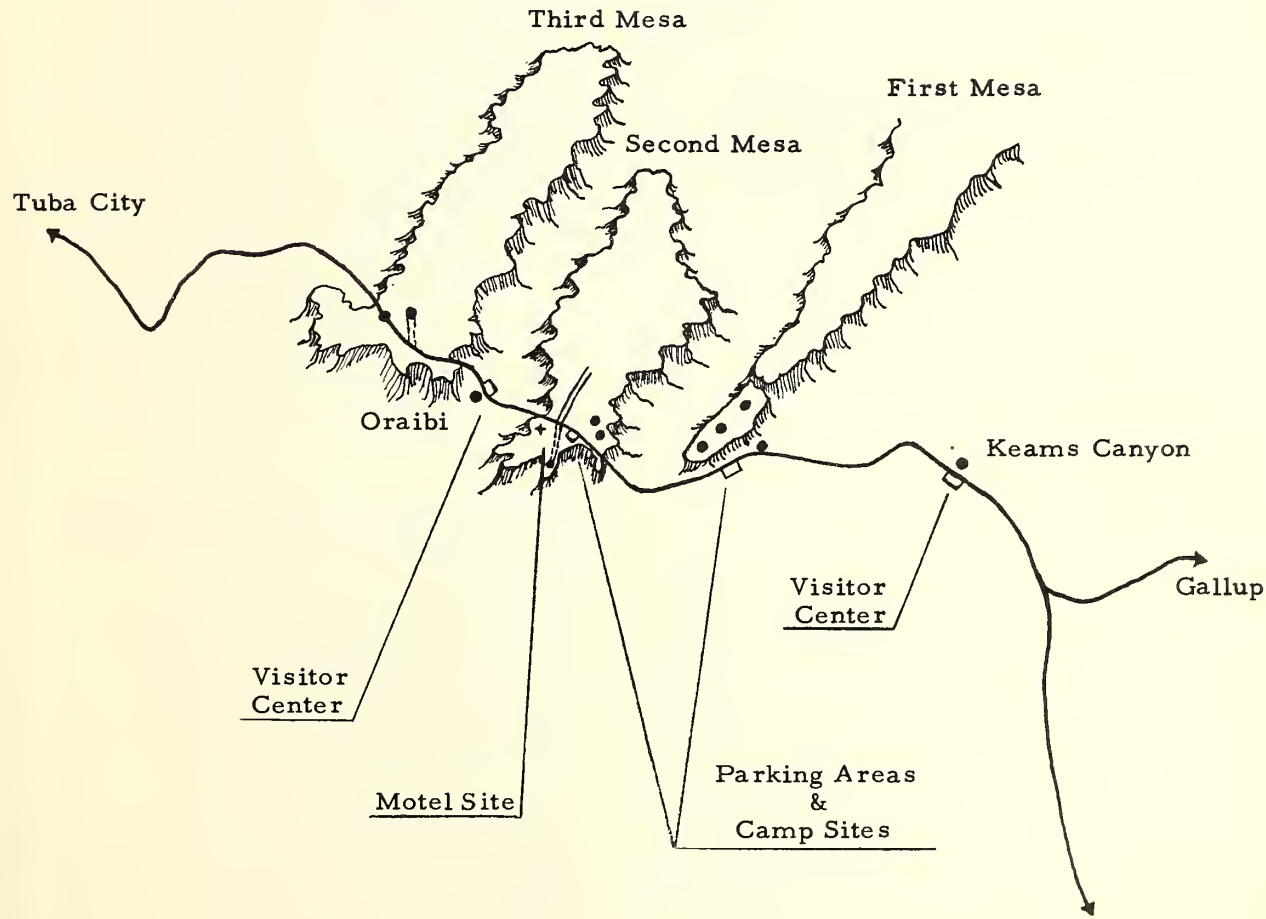
Signs on and off the reservation must be erected to draw the attention of motorists. These signs should be colorful, possibly featuring one or another of the Kachinas or other Hopi artistic themes along with a message and an invitation. The actual painting of the signs could be a voluntary task for Hopi artists and craftsmen. It may be possible to obtain sites for the signs at no cost if the public service nature of the project is explained to landowners. If necessary, sign space may be rented at moderate cost away from the larger towns. It is particularly important that signs be erected in the following places:

- Junction of Keams Canyon Road and U.S. 66
- East of Gallup, New Mexico
- Junction of U.S. 666 and Indian Route 3
- U.S. 89 north and south of Tuba City Junction
- Junction of U.S. 89 and Grand Canyon Road
- West of Flagstaff and Williams on U.S. 66
- Eastern and western reservation boundaries
- Junction of Indian 3 and road to Holbrook

In the case of the Holbrook Junction, 9 miles east of Keams Canyon, it is likely that many of the visitors to Canyon de Chelly do not realize how close they are to the Hopi Villages. According to the superintendent there, motorists drive up to the Canyon from Gallup and back down to Holbrook.

Inexpensive flyers or pamphlets should be printed for distribution in motels and gasoline stations along Route 66, near the large national parks and to travel agents. This literature should accomplish two things: inform the tourist about the attractions on the reservation including road conditions, and issue an invitation to visit. Chambers of commerce

Exhibit 5
LOCATION OF TOURISM FACILITIES



Source: Management Research Division, Armour Research Foundation.

should not be overlooked as distribution centers for this material.

An additional means of employing pamphlets is in connection with Hopi arts and crafts. These items have a wide distribution in the Southwest. With each basket, article of pottery, silver item, or doll, there could be a small pamphlet describing the craft work and telling something about the reservation, coupled with an invitation to pay the tribe a visit.

The Hopi Way of Life Should Form the Central Theme in Promotional Literature

Modern life is hurried and uncertain. Hopi life, on the other hand, strives for peace, tranquility and dignity. The devotion of the Hopi people to their religion, their art and their thousand-year old residence will interest and impress the tourist who may feel a lack of such stability in his own life. The Hopi ability to lead a constructive and rewarding life with very little in a material sense should be highlighted.

Visitor Centers, Parking Areas and Guide Services Should Be the First Facilities Organized

While promotion is building up the reservation traffic volume, steps must be taken to induce tourists to stop and visit. Visitor centers need not be expensive. Hopi builders should be encouraged to contribute their time to construct small open booths manned by one or two Hopis who can give directions and information to the tourist. Lead-up signs should be provided. The BIA roads department should be approached to provide grade and paved parking areas for 20 cars in the First and Second Mesa areas. The location of these and other facilities is shown in Exhibit 5.

Early Action Should Be Taken On Obtaining National Monument Status for Awatovi

Writing an interpretive prospectus and the acquisition of the necessary congressional and Interior Department support for a national monument can be a lengthy process. The tribe should contact the Department of Anthropology at Harvard and the Museum of Northern Arizona for prospectus material and the services of a graduate student to help in prospectus preparation. Meetings with the Arizona Congressional delegation should be scheduled at the same time. Discussions should be held with the National Park Service on the possibility of creating a Hopi Ranger Service in connection with the monument and on the technical problems of stabilizing and further developing the ruins.

The Timing of Motel Construction Depends On Traffic Volume

The Hopi Tribe must continue to monitor traffic through the reservation not only to measure the effectiveness of promotion, but to select the proper

moment to engage a concessionaire. The higher the demand for accommodations, the better the terms and facilities which will be offered. Traffic should be at least twice the present 15,000 vehicles a year level and preferably higher.

A minimum scale of operation for reservation tourism would be the construction of parking areas, visitor centers, and guide services. This would at least permit the improvement of the arts and crafts business and provide jobs for guides. Although motels smaller than 30 units could function at traffic levels lower than 30,000 vehicles per year, 30 units is considered to be an optimum size in terms of cost of water compared to motel cost, incorporation of facilities such as a restaurant, and the provision of space for small shops or displays.

Competitive Bidding Procedures Should Be Followed In Obtaining a Concessionaire

A franchise or right to build and operate a motel and restaurant business on the reservation should be offered on a bid basis to interested parties. Competition would be on the basis of the quality of facilities offered, the number of Hopis to be employed, including managers, and the percentage of gross receipts to be paid to the tribe for the privilege. Assurances of cooperation in over-all tribal tourism and promotional efforts should also be obtained. The possibilities of obtaining a satisfactory concessionaire are good. During the course of the study team's interviews a number of operators expressed interest in the project, and the tribe is aware that the present reservation trader is interested in expanding his business.

Installation of a Water System for the Motel Should Be Considered Following Negotiations With Concessionaries

Motel location will depend on the ability of the Tribal Council to acquire the necessary land and the success of a well drilled in that area. At the time mutually satisfactory arrangements have been reached between a concessionaire and the tribe on the matter of motel construction, discussions should be held with the Area Redevelopment Administration regarding a grant for the construction of the necessary water system. The development of tourism and the consequent improvement in the Hopi employment situation is contingent on such a well. Surplus water from the installation will encourage the development of other businesses in the vicinity of the motel. Should ARA financing be unavailable, the system will have to be part of the motel cost or possibly the result of a Public Health Service program. This latter arrangement would likely require a common water supply with the Second Mesa villages.

The Hopis Should Plan to Acquire Most of the Necessary Investment From Sources Other Than the Tribe

Total program costs will be on the order of \$627,000. Portions of the operating and investment expenses such as the cost of pamphlets, signs, and the visitor centers will have to come from tribal funds. However, the major costs of the development plan will have to be borne by others. The investment required and sources are summarized:

Motel-Restaurant (Concessionaire)	\$360,000
Parking and campgrounds (BIA road program)	15,000
Water system (ARA)	51,000
Museum-ruins stabilization (Nat. Park Ser.)	197,000
Publicity, visitor centers (Tribe)	4,000
	<u>\$627,000</u>

The cost of \$360,000 for the motel and restaurant is based on the assumption that the restaurant will be expanded from the 60 seats included in the 30-unit motel to 120 seats at an additional cost of \$1,000 per seat.

The Tribal Council Should Delegate the Tourism Development Responsibility to a Committee

The majority of the work to be carried out in bringing commercial tourism to the Hopi Reservation is administrative and executive in nature. Policy should be set in the Tribal Council, but there should be no attempt to make operating decisions in what is essentially a legislature. One individual on the committee can act as its executive director and be responsible for the continuation of promotion and the supervision of the concessionaire activities. Like other committee memberships in Hopiland, these men will probably have to serve without pay, so consideration should be given to selecting individuals with adequate time and personal resources for the work. In general, the committee will implement the plan of action described in this chapter and develop the necessary liaison on and off the reservation. A possible implementation time scale is shown in Exhibit 6.

Up to 33 Jobs Will Be Created Through Tourism

National averages indicate that for every 10 units, motels employ two persons in housekeeping functions and about 1.2 persons in administrative, maintenance, and other functions. On the basis of a 30-unit motel, this would produce 10 jobs. The average national cost for restaurant staff is 30 percent of sales. With a sales volume of \$138,000 annually, this would mean an average weekly payroll of \$795, or an additional 13 jobs at \$1.50 per hour. Since there are a number of gas stations in the reservation

now, there may not be any new construction, but there will be an increase in business and some expansion which the study team estimates can create four additional jobs based on one each for those stations nearest the motel, visitor centers, and parking areas. The parking areas and visitor centers will employ at least six guides. The impact on arts and crafts is difficult to quantify since the necessary skills cannot be acquired overnight. However, the money to be spent in this area will certainly improve the financial condition of the people currently employed in craft production. Totalling these employment estimates, we have the following:

Motel	10 jobs
Restaurant	13 jobs
Service stations	4 jobs
Guides	6 jobs
Total	<u>33 jobs</u>

The Income to the Hopi Tribe Will Approximate \$167,000 Annually

On the assumption that lease and franchise arrangements can be negotiated, giving the tribe 2 percent of the gross business conducted with tourists, as is the usual reservation practice, the direct income to the tribe should be about \$8,000 per year. Collecting 2 percent of the \$424,000 sales potential from isolated merchants and craftsmen may be somewhat difficult but the majority of the income can be assessed directly. On the basis of the employment created, the following income can be derived:

Restaurant payroll	\$41,400
Motel payroll	16,600
Service station employment	8,300
Guides, arts, crafts	93,000
Sub-total	<u>\$159,300</u>
Council income	8,000
Grand Total	<u>\$167,300</u>

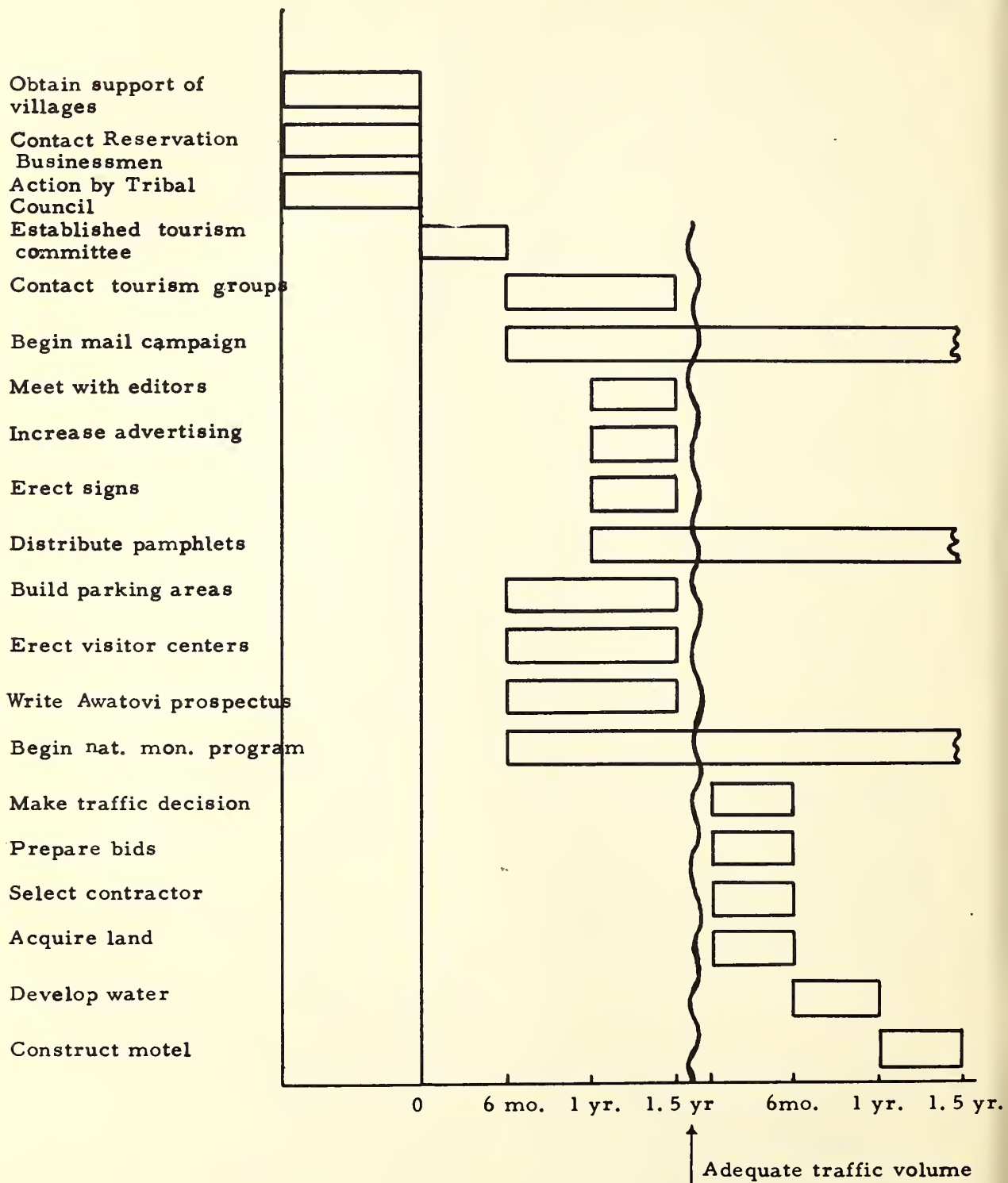
THE HOPI TOURIST ATTRACTIONS

Those features of Hopi life and culture, and geographic and historical sites on the reservation which would be of interest to tourists is based on observations of the study team, interviews with park superintendents and others concerned with northern Arizona tourism, and the results of the reservation traffic survey.

Tourists Came to Hopiland for a Variety of Reasons

A traffic survey revealed that tourists visited the reservation for at least 15 different reasons ranging from "just passing through" to such specific interests as dances and arts and crafts. The reasons were grouped into four categories: non-tourist travel,

Exhibit 6
PLAN OF ACTION - TIME SCALE



Source: Management Research Division, Armour Research Foundation

EXHIBIT 7
TRAFFIC SURVEY RESULTS SHOWING
WHY PEOPLE VISITED THE RESERVATION

	Number	%
<i>BUSINESS TRAVEL</i>	49	17%
<i>CASUAL</i>		
Passing through	92	34%
Vacation	26	9
Curiosity	9	3
Sightseeing	22	7
	149	53%
<i>RESPONDED TO PROMOTION</i>		
Heard of it	19	6%
Read of it	10	3
Guide books	3	1
Inquired	6	2
	38	14%
<i>SPECIFIC INTEREST IN</i>		
Dances	2	1%
Indians in general	15	5
Hopi	19	6
Arts & crafts	2	1
Ruins, history	7	3
	45	16%
TOTAL	281	100%

Source: Management Research Division, Armour Research Foundation

casual visit, response to promotion, and visit for specific interest, as shown in Exhibit 7, and summarized as follows:

Non-tourist travel	17%
Casual visit	53%
Promotion	14%
Specific interest	16%

Twelve percent of respondents recognized that reservation Route 3 is the shortest distance between Gallup and the Grand Canyon or between Gallup and southern Utah. Those in the "casual visit" group were generally on vacation and came without any specific knowledge of what they were going to see. It was evident that they saw very little and certainly did not stop to examine the reservation attractions in more detail. In the group exposed to some sort of promotion were the travelers who had been urged to come to Hopiland by friends, relatives, rangers, and travel agents. Those persons with specific interests in Indians in general and Hopis in particular covered the entire range of local attractions as reasons for visiting in their responses.

Tourist Interest in the Reservation Ranged From "Everything" to "Nothing"

The traffic survey also revealed a reaction to what the most interesting features of the reservation

are. The number of responses indicating "nothing" was a rather small 8 percent of the total people interviewed. The responses were grouped into three categories: physical attractions, culture and way of life, and indefinite. The results, shown in detail in Exhibit 8, are summarized as follows:

Physical attractions	34%
Culture, way of life	44%
Indefinite	22%

Scenery headed the list of physical attractions, and the Hopi Villages were the point of most responses of the culture group. The largest component in the indefinite category was the 14 percent responding that everything was interesting. Such specifics as arts and crafts, dances, and trading posts were seldom mentioned, thus confirming the idea that many tourists suffer from a lack of knowledge and information about the reservation. Ruins, for example, which are a popular attraction in most of the southwest, were mentioned by only 1 percent of those interviewed. This is probably due to the fact that these people do not realize that there are extensive ruins in the Hopi area. The Ranger Service at the Grand Canyon National Park stated that people have to be shown what there is to see, even at an attraction as large as the Grand Canyon. The results of the travel survey conducted at Keams Canyon by the study team confirmed this finding.

EXHIBIT 8
TRAFFIC SURVEY RESULTS SHOWING
OPINIONS ON INTERESTING FEATURES
OF THE RESERVATION

<i>PHYSICAL ATTRACTIONS</i>	Number	%
Scenery	87	32%
Geology	6	2
	93	34%
<i>CULTURE, WAY OF LIFE</i>		
Villages & homes	63	23%
People	11	3
Way of life	9	3
Arts & crafts	13	5
Farms	14	5
Dances	3	1
Trading posts	2	1
Schools	2	1
Ruins	3	1
	120	44%
<i>INDEFINITE</i>		
Everything	39	14%
Nothing	22	8
	61	22%
TOTAL	274	100%

Source: Management Research Division, Armour Research Foundation

There Are Three Categories of Exploitable Tourist Resource on the Hopi Indian Reservation

The responses given by tourists to the traffic survey can be grouped into three categories of tourist attraction. These are the country and scenery, the ruins and items of historical interest, and the Hopi culture and way of life.

The Scenery on the Hopi Reservation Has a Rugged Beauty

A trip across Arizona on Route 66, 75 miles south of the reservation, is not particularly interesting with the exception of the Petrified Forest and Painted Desert. The reservation, on the other hand, presents many spectacular views from the mesa tops. The mesas themselves are considered quite impressive as is the area of the Hopi Buttes on the road to Holbrook.

A large number of visitors to the reservation were campers and many traveled with trailers. The opportunity for hiking, camping, and Jeep trips to the more remote parts of the reservation would appeal to these people. The climate for this type of outdoor living is ideal as the temperatures never reach levels comparable to southern Arizona and the nights are invariably cool. The area is also ideal for riding, particularly for the purpose of reaching some of the ruins. The existing campground at Keams Canyon usually attracts four or five camping parties a night, some of which stayed for several days. With the further development of reservation roads, some of the more spectacular country of the Black Mesa will be accessible and available for tourist enjoyment. People attracted into the area for the passive enjoyment of the scenery may well be induced to remain and examine reservation life in more detail.

The Ruins and Historical Sites of the Pueblo Indians, Like That of the Hopis, Are Perennial Tourist Attractions Throughout the Southwest

In 1961, 950,000 people visited national monuments and parks whose main feature was a Pueblo Indian ruin of some sort, as indicated in Exhibit 9.

On the Hopi Reservation there are a large number of unexcavated ruins and the major ruin of Awatovi, dug by Peabody Museum (Harvard) in the early 1930's. The Awatovi ruin has a spectacular view of the Hopi Buttes and the many volcanic necks to the south, making its location most interesting. The walls are in need of some stabilization, and further repair and excavation are clearly needed. The road leading to the ruin is extremely poor and is not likely to be traveled by other than the most intrepid tourists. Even though the wall paintings found in the many Kivas and the beams of the Franciscan church have been removed to Harvard University, reproductions, similar to those in the Museum of Northern Arizona can doubtless be had. Since there are a number of graduate students in anthropology searching for excavatable sites, ruins now covered could be inexpensively excavated and restored and eventually be available for tourist inspection.

EXHIBIT 9
VISITS TO PARKS AND MONUMENTS WITH
PUEBLO RUINS
1960 - 1961

<u>NATIONAL PARKS</u>	1961	1960	% Change
Mesa Verde, Col	227,000	225,000	+ 1%
<u>NATIONAL MONUMENTS</u>			
Aztec Ruins, N. M.	42,000	38,000	+10%
Bandalier, N. M.	90,000	881,000	+11%
Canyon de Chelly, Ariz.	26,000	20,000	+13%
Casa Grand, Ariz.	887,000	77,000	+13%
Chaco Canyon, N. M.	22,000	26,000	-15%
Gila Cliff Dwellings, N. M.	2,900	2,300	+26%
Gran Quivera, N. M.	10,600	10,300	+ 3%
Hovenweep, U.	3,300	2,800	+18%
Montezuma Castle, Ariz.	208,000	177,000	+17%
Navaho, Ariz.	3,900	2,500	+55%
Tonto, Ariz.	54,000	46,000	+17%
Tuzigoot, Ariz.	34,000	34,000	0
Walnut Canyon, Ariz.	74,000	66,000	+12%
Wupatki, Ariz.	65,000	57,000	+14%
TOTAL	949,700	864,900	

Total % increase 10%

Source: U. S. Department of the Interior, National Park Service

The Hopi People and Their Culture as a Living Example of Pueblo Life Are the Greatest Attraction

The Hopi tenacity in preserving their traditional way of life has created a valuable tourist attraction and asset, provided the Hopi people wish to take advantage of it. This traditional way of life includes arts and crafts, homes and villages, ceremonies, dress, and customs of the people in general.

• *The Hopi villages are a renowned attraction in the Southwest*

A number of those individuals interviewed by the study team were long-time residents of the Southwest who recalled a first visit to the Hopi villages or dances when there were virtually no roads in the area. Experts on southwestern lore take pride in personal acquaintance with individual Hopis and seem to regard the villages as shelters quite removed from the twentieth century pace.

However, because the villages blend so well with the native rock of the mesas, they go unnoticed by many tourists driving through the reservation. In addition, the roads leading to the villages are poorly marked and many tourists who would like to visit do not make the attempt.

The study team received considerable comment about the lack of signs and other information, and some tourists thought they needed permission to enter the villages. Tourists were invariably surprised to learn that Oriabi is the oldest continuously inhabited town in North America or that the Hopis have occupied this region for over a thousand years.

- *Interest was expressed in the individual dwellings and farms as well as the villages*

A few people interviewed by the study team appreciated the fact that the Hopis are skilled stone masons and have unique agricultural methods. Tourists interested in the farms commented on the livestock, asked questions about the types of crops, and wanted to know how it was possible to raise corn in a sand dune, but few actually stopped to examine fields or houses.

- *Some of the Hopi ceremonies have been world-famous for years*

The annual snake dances are well known and highly regarded as a thing to see when traveling the Southwest. This ceremony was attended by over 3,000 persons in 1962 and this appears to be the maximum number able to crowd onto the mesas for the event. However, the Hopis have over 200 ceremonial days a year which are exploitable tourist attractions. Not all of these ceremonies are colorful or permit public attendance, but there are a sufficient number so that a Hopiland tourist will have an opportunity to see some sort of ceremonial attraction during his stay. The restriction on photographing the dances and villages is a limiting factor and will become more difficult to enforce as more people visit the reservation. However, violations of this restriction can be held to a minimum with improved information services and supervised visits to the villages.

- *Hopi arts and crafts are another exploitable tourist attraction*

The principal Hopi arts and crafts are overlay jewelry and other types of silversmithing, two types of basketry, pottery, and the well-known Kachina Dolls. Fabrics and certain types of ceremonial garments could be included, but the trade in these items is largely with other tribes rather than tourists. Since many of the items are made for the purpose of presentation as gifts, dowries, or items of religious training with the expectation that they will be sold and that similar gifts must be returned, output and quality has remained at reasonably high levels.

- *Contemporary reservation life is an additional attraction*

The activities of the Bureau of Indian Affairs on the reservation, particularly its school programs, are potentially interesting to tourists. Land use, cattle sales, rodeos, trading activities, and the Indian government are capable of attracting tourist interest.

The Hopi Attractions Are Not Well Developed Or Sponsored

The large number of people coming to the reservation with no specific purpose in mind and the rather nebulous accounts of what they saw indicate that the Hopi tourist attractions lack positive development. Many of the people passing through the

reservation are on their way to or from the Grand Canyon and, with the present lack of signs and other inducements to stop, see no reason to lose time in reaching their destinations. The economic exploitation of reservation tourism at this time is entirely in the hands of individual traders and storekeepers who have neither the resources nor the inclination to act in a planned and concerted way. The present state of development of the Hopi tourist resources is also a reflection of the fact that the tribe has very little money and the powers and range of action of the tribal government are very limited.

THE HOPI TOURIST MARKET

Determination of the volume and type of tourist traffic which can be attracted to the reservation are presented and analyzed. Seasonal factors and the level of tourist expenditures are developed.

The Hopi Reservation Is Near Major Sources of Tourist Traffic, But Is Acquiring Very Little of It

In 1961, 185,000 cars visited the Petrified Forest to the south of the reservation and 350,000 cars visited the Grand Canyon to the west as indicated in Exhibit 10. In this same time period, 1,350,000 out-of-State cars passed over Route 66, 75 miles away. However, only a trickle of this traffic is to be found on or near the Hopi Reservation. During the conduct of the Hopi traffic survey approximately 90 tourist vehicles a day or an estimated 15,000 cars annually, taking into account seasonal variations, passed through Keams Canyon, as shown in Exhibit 11. Since the survey was conducted during the week before Labor Day, this figure can be considered near the peak daily traffic for the year. Although the reservation is favorably located with respect to the Grand Canyon, the lack of development over the entire length of Indian Route 3 is a serious inhibition to tourist traffic. The volume of traffic in the Hopi area is entirely too low with respect to its geographic advantages.

Indian Route 3 Possesses Two Distance Advantages over Route 66

The route through the reservation from Gallup, N. Mex., to the north rim of the Grand Canyon is 66 miles, or 17 percent shorter than the same journey over Route 66 through Flagstaff, as shown in Exhibits 12 and 13. This route is also shorter for persons travelling to and from the southern Utah parks, Zion and Bryce Canyon, and those travelling north to Salt Lake. In addition, Route 3 is seven miles shorter from Gallup to the Grand Canyon south rim than the Flagstaff route. While this latter saving of 3 percent of the distance to the south rim is not considered significant, at least Route 3 is at no disadvantage.

Thus, with respect to the northern Arizona road network, there are five favorable routes through

**EXHIBIT 10
GRAND CANYON VISITORS, 1961***

Month	East Gate	North Gate	South Gate	Total	Total % Annual
Jan.	3,004	....	4,791	7,795	2.2%
Feb.	2,541	....	5,795	8,336	2.4
March	3,412	....	10,305	13,717	3.9
April	5,340	....	12,859	18,199	5.2
May	7,687	2,790	15,828	26,305	7.6
June	16,558	9,712	34,169	60,439	17.2
July	17,906	12,141	39,431	69,478	20.0
Aug.	16,582	12,385	36,855	65,822	18.7
Sept.	9,821	7,680	19,247	36,748	10.5
Oct.	6,580	2,585	14,564	23,729	6.7
Nov.	3,267	34	7,079	10,380	3.0
Dec.	2,213	....	4,685	6,898	2.6
TOTAL	94,911	47,327	205,608	347,838	100.0%
July 1962					
	23,071	13,600	47,107	83,778	

* Figures are automobile entries
Source: Superintendent, Grand Canyon National Park

**EXHIBIT 11
HOPI TRAFFIC SURVEY RESULTS**

	Total	% Total	Avg./Car	Per Day/Car	Per Person/Day
* Automobiles	284				
Persons	942		3.3		
Men	337	36%	1.2		
Women	370	39%	1.3		
Children	235	25%	0.8		
Miles driven				390	
Days in Arizona			2.6		
Expenditures	\$19,711.00			\$26.70	\$8.10
Stay overnight?					
Yes	250	88%			
No	34	12%			
Occupation					
Professional	123	43%			
Non-professional	161	57%			

* Represents approximately 60% of total tourist traffic. Adjusted rate slightly more than 90 cars per day.
Source: Management Research Division, Armour Research Foundation

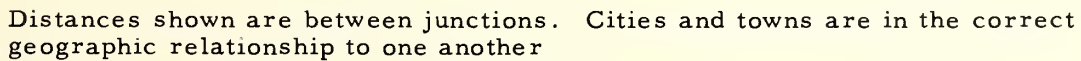
the reservation. These are Gallup to either rim of the Grand Canyon and to southern Utah, Holbrook to the north rim of the Grand Canyon and to southern Utah, Holbrook to the north rim of the Canyon and to southern Utah.

Over-All Lack of Facilities and Accommodations Are Reasons for the Low Traffic Volume Encountered Through the Reservation

To take advantage of the reservation's distance savings to the Grand Canyon, the decision to pass through the reservation must be taken in Gallup, N. Mex., which is 259 miles from the south rim and

326 miles from the north rim of the Grand Canyon. Persons going to southern Utah must elect Indian Route 3 no further west than Holbrook, Arizona, 225 miles from Page just below the Utah State line. Though it would be an error to say that there are no facilities or accommodations on the Hopi-Navaho Reservations, in comparison with the highly developed services along Route 66, they are minimal. Thus, choosing the reservation route commits the traveler to a drive of four to six hours (225 to 326 miles) during which time his choice of eating places, overnight accommodations, and service stations is severely limited.

Exhibit 12



Source: Management Research Division, Armour Research Foundation

EXHIBIT 13
COMPARATIVE DISTANCE ANALYSIS

	GALLUP			HOLBROOK			SHIPROCK		
	Miles	Diff.	%	Miles	Diff.	%	Miles	Diff.	%
FLAGSTAFF									
Via Rt. 66	187			91			278		
Via Rt. 3	253	66	35%	225	134	148%	328	50	18%
Via Rt. 1	..			..			256	(22)	(8%)
GRAND CANYON N. RIM									
Via Rt. 66	392			296			483		
Via Rt. 3	326	(66)	(17%)	298	2	1%	401	(82)	(15%)
Via Rt. 1	420	28	7%	..			329	(154)	(32%)
GRAND CANYON S. Rim									
Via Rt. 66	266			170			357		
Via Rt. 3	259	(7)	(3%)	231	61	36%	334	(23)	(6%)
Via Rt. 1	353	87	33%	..			262	(95)	(27%)
PAGE									
Via Rt. 66	320			223			410		
Via Rt. 3	253	(67)	(21%)	225	2	1%	328	(82)	(20%)
Via Rt. 1	347	27	8%	..			256	(154)	(38%)
Distances given are over routes shown. Differences and percent differences are with respect to Route 66. Parentheses indicate less-than.									
Source: Management Research Division, Armour Research Foundation									

The Success of Hopi Tourism Depends Heavily Upon Grand Canyon Visitors

The existence of the Grand Canyon as a tourist attraction is basic to all southwestern tourism and particularly to the lesser attractions of northern Arizona. A recent survey by the American Automobile Association indicated that this natural wonder is the leading tourist attraction in the United States. On the basis of 1961 Park visits and visitor spending habits developed by the 1954 "Grand Canyon Travel Survey," slightly over \$30 million was spent in Arizona on Park tourism in 1961.

The Grand Canyon Travel Survey of 1954 and the subsequent records of the National Park Service provide a detailed picture of the touring patterns in and around the Park. An analysis of these patterns by the study team indicates that a reasonable potential of visitors to Hopiland may exist among Grand Canyon tourists. The north and south rims of the Park have sufficiently different traffic patterns to be regarded as two parks rather than one.

The Most Important Parameters of Park Tourism Affecting Hopiland Are the Approach and Departure Routes Taken

Although the Grand Canyon Survey is dated, the traditional night-before and night-after stopping places have remained largely the same. The only major shift in the origin of Park visitors in the period under consideration has been the increase in Arizona's contribution—from 6 percent to 14 percent. There are two significant traffic patterns connected

with the Park: one is the movement through the Park from all over the country, and the other is the local circulation of traffic to the attractions around Flagstaff, southern Utah, and Las Vegas. The study team's analysis is concerned primarily with the through-traffic patterns and whether the visitor had an opportunity to pass through the Hopi Reservation without serious inconvenience on his way to or from the Park.

Overnight Stops of Visitors Were Plotted With Respect to Distance and Cardinal Direction from the Park

Exhibit 14 gives the location of visitors to the Grand Canyon south rim the night before and the night after the Park visit. The number of vehicles listed are 1961 Park entries. In Exhibit 15, the vehicle locations are plotted on a map of northern Arizona. The coordinate systems in the lower right and left-hand corners of the exhibit indicate the percentage of total traffic concentrated in each quadrant. Traffic having origins or destinations more than 300 miles from the Park is not classified by town. This latter traffic was distributed in proportion to the amount of traffic in each quadrant of known origin and destination.

U. S. Highway 66 Is the Primary Approach and Departure Path for South Rim Visitors

On the basis of their location the night before entering the Grand Canyon south rim, 46 percent of the visitors were in locations which indicate that

they traveled along Route 66 from the east, while 42 percent were located as to imply an approach from the west on Route 66. A little more than 8 percent of the night-before stops were to the north and south on Route 89. Approaching the south rim from the northeast may become significant in the future since the opening of Navaho 1. Approximately 38 percent of visitors from all directions were in locations less than 100 miles from the Park, reflecting the concentration of accommodations in that area and the numerous smaller attractions and touring grounds located there. The pattern at distances over 100 miles is comparatively uniform for travelers in both directions, with Las Vegas, Kingman, and Needles accommodating about the same number of visitors as Gallup and Holbrook.

The Hopi Reservation Can Attract Tourists from Holbrook, Gallup and East of Gallup

Obviously, very few tourists are going to back-track to visit the reservation so that once Holbrook has been passed these visitors are lost as tourist potential. Holbrook itself is in a poor position to divert visitors through the reservation since this trip to the south rim is 61 miles longer than the same trip through Flagstaff. However, its proximity to the reservation and the high Indian orientation of Hol-

brook may permit it to direct a small amount of south rim destination traffic to the Hopis. Gallup is a more promising source of visitors and this was borne out by the reservation traffic survey which indicated that 44 percent of the westbound traffic originated east of Gallup, primarily in Albuquerque, which can also be considered another source of visitors. By contrast, Holbrook contributed a rather small 10 percent. Although the reservation's distance advantage to the Grand Canyon south rim is less than its north rim distance advantage, westbound traffic on Route 66 destined for the south rim represents the Hopi's best opportunity to attract visitors. Nearly seven-and-a-half times as many people visit the south rim as the north.

The South Rim Departure Patterns Remain Favorable to the Hopis

As is shown in Exhibit 15, a substantial number of people continue east on Route 66 after leaving the Park. Although their number is smaller than for arrivals, they are all concentrated at one end of a favorable path through the reservation prior to departing. It will be noted from Exhibit 14, that visitors tend to drive greater distances after leaving the Park so that the lack of accommodations in the reservation will be less of a handicap. This is

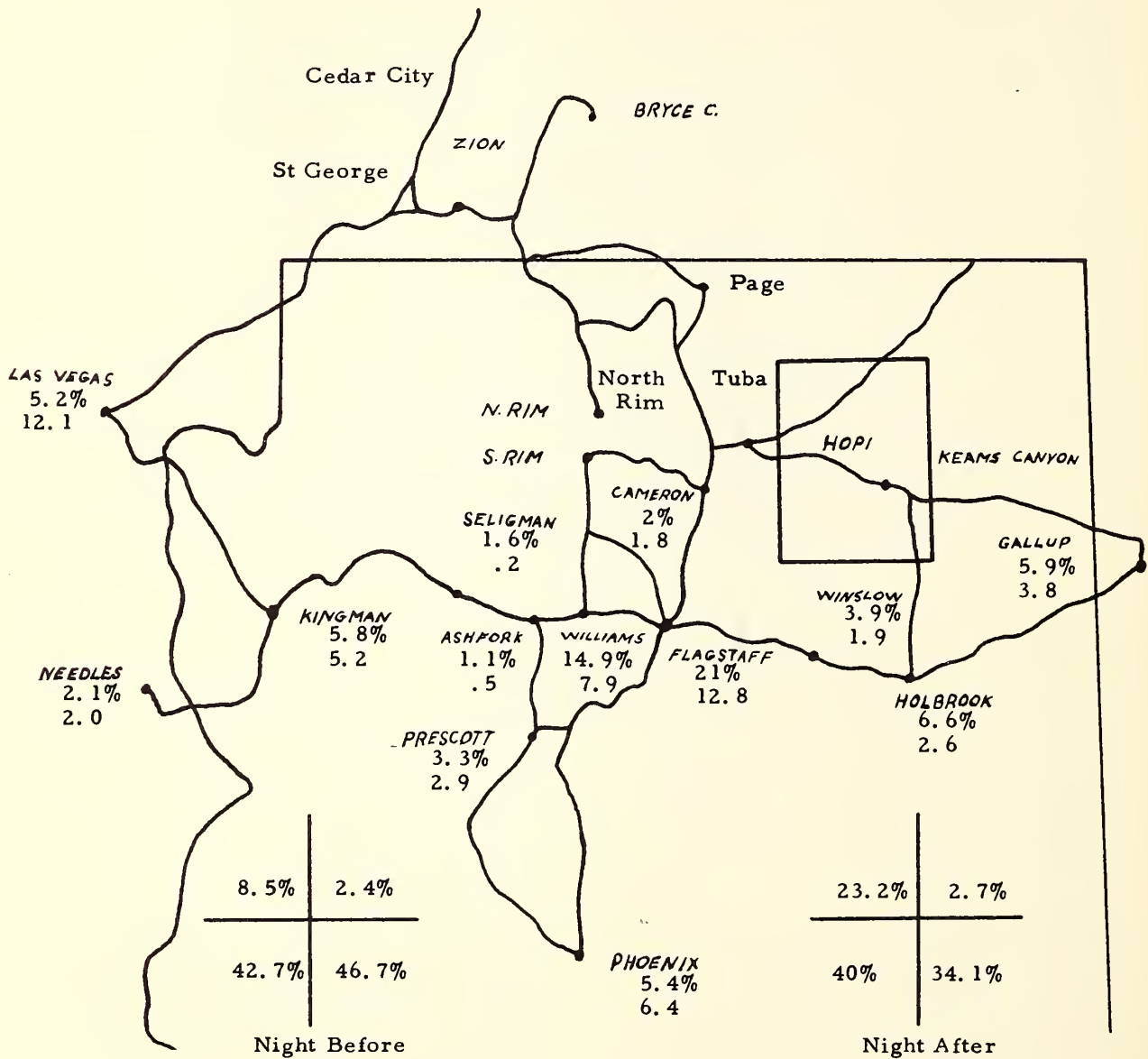
EXHIBIT 14
MAJOR STOPPING PLACES OF GRAND CANYON
SOUTH RIM VISITORS*

<i>Town</i>	<i>Night-Before Visitors</i>		<i>Night-After Visitors</i>	
	<i>%</i>	<i>Total</i>	<i>%</i>	<i>Total</i>
Under 100 Miles				
Ashfork	1.1%	3,300	.5%	1,500
Cameron	2.0	6,000	1.8	5,400
Flagstaff	19.4	58,200	12.8	38,400
Williams	14.9	44,700	7.9	23,700
101-150 Miles				
Prescott	3.3	9,900	2.9	8,700
Seligman	1.6	4,800	.2	600
Winslow	3.9	11,700	1.9	5,700
Oak Creek Canyon	1.6	4,800	1.0	3,000
151-200 Miles				
Holbrook	6.6	19,800	2.6	7,800
Kingman	5.8	17,400	5.2	15,600
3 Less than 1%	1.3	3,900	.9	2,700
201-300 Miles				
Phoenix Valley	5.4	16,200	6.4	19,200
Kanab	1.3	3,900	1.6	4,800
4 Less than 1%	.8	2,400	1.6	4,800
Gallup	5.9	17,700	3.8	11,400
Las Vegas	5.2	15,600	12.1	36,300
Needles	2.1	6,300	2.0	6,000
5 Less than 1 %	1.1	3,300	2.0	6,000
Sub-total	83.3%	249,900	67.2%	200,600
Over 301 Miles	16.7%	50,620	32.8%	99,920
TOTAL	100.0%	300,520	100.0%	300,520

* 1961 attendance with 1954 distribution

Source: Arizona Highway Department

Exhibit 15
SOUTH RIM APPROACH AND DEPARTURE ROUTES



Town
Night Before
Night After

Source: Management Research Division, Armour Research Foundation
Plotted from Grand Canyon Travel Survey

**EXHIBIT 16
RESERVATION TRAFFIC ORIGIN SUMMARY**

Route 66 Westbound			Route 66 Eastbound		
Albuquerque	13		Flagstaff	13	
East of Gallup	11		Holbrook	4	
Gallup	23		Kingman and West	7	
Holbrook	5		Williams	14	
	52	19.3%	Winslow	3	15.2%
Route 89 North bound			Route 89 Southbound		
Cameron	13		Bryce Canyon	2	
South of Flagstaff	6		Kanaba	11	
	19	7.2%	Page & North	15	
			Zion	13	
				41	15.2%
Route 666 Southbound			Navaho-Hopi Reservations		
Cortez	3		Canyon de Chelly	16	
Durango	6		Ganado	4	
Farmington	2		Kayenta	7	
Mesa Verde	3		Tuba City	1	
	14	5.2%	Window Rock	7	
				35	13%
Grand Canyon North	26	9.7%	Grand Canyon South	41	15.2%
Source: Management Research, Armour Research Foundation					

borne out in Exhibits 16 and 17, which indicate that 97 percent of the traffic through the reservation destined to continue east on Route 66 tends to stop in Gallup or beyond. Holbrook again reflected its distance disadvantage by providing only 3 percent of destinations. The 23 percent of visitors who depart to the north go largely to Las Vegas and cannot be considered as tourist potential. Although a few individuals on their way to Las Vegas passed through Keams Canyon, Route 3 offers no distance advantage to that destination. Those leaving the Park late in the afternoon are more likely to spend the night in Flagstaff with its varied accommodations than to gamble on finding something further east.

North Rim Visitors Will Be a Less Significant Component in Hopi Tourism

As indicated in Exhibits 18 and 19, the overwhelming majority of north rim visitors come and go through southern Utah. The choice as to which rim to visit may well have been made as far east as St. Louis when the tourist elected either Route 40 and Denver or Route 66 and the southwest. It seems likely that the few visitors who approach from the north and depart south are returning from vacations in the northern portions of the West Coast.

One and One-Half Percent of the Reservation Traffic Was Bound for the North Rim

The traffic survey at Keams Canyon counted only four cars destined for the north rim. Although the reservation route to the north rim is 66 miles shorter than Route 66, only about 10 percent of those traveling to the north rim approach from the south-

east. Indian Route 3's mileage advantage cannot substitute for the general lack of traffic approaching the north rim from this direction.

Fifteen Percent of the Reservation Traffic Was Coming from the North Rim

Visitors eastbound from the Canyon offer a brighter picture for Hopi tourism. Approximately one-fourth of the departures from the north rim are in the direction of the reservation. While the south rim attracts seven and one-half times as many visitors as the north, the traffic volume at Keams Canyon from the south rim was only one and one-half times greater than that from the north. Here the distance advantage becomes apparent. These visitors from the north rim are likely to be good prospects for an overnight stay since the reservation is 226 miles from the north rim and Gallup is 326. Persons leaving the rim after lunch are apt to be interested in accommodations in the area of Keams Canyon or Holbrook. In addition, Holbrook is not at a disadvantage in miles to the north rim through Hopiland and should therefore be a more fruitful source of origins and destinations than was the case with respect to the south rim.

A Summary of Reservation Routes to and from the Grand Canyon Indicates Medium-to-High Possibilities for Attracting Visitors

Of the four routes discussed, two have high traffic volumes with medium prospects for attracting tourists and two have low-to-moderate volumes with high prospects.

EXHIBIT 17
RESERVATION TRAFFIC DESTINATION SUMMARY

<u>Route 66 Westbound</u>			<u>Route 66 Eastbound</u>		
Flagstaff	10		Albuquerque	41	
Holbrook	4		East of Gallup	18	
Kingman and West	7		Gallup	73	
Williams	3		Holbrook	4	
Winslow	2			136	50.0%
	<u>26</u>	9.7%			
<u>Route 89 Northbound</u>			<u>Route 89 Southbound</u>		
Bryce Canyon	1		Cameron	3	
Kanab	7		South of Flagstaff	3	
Page and North	14			<u>6</u>	2.2%
	<u>22</u>	8.2%			
<u>Route 66 Northbound</u>			<u>Navaho-Hopi Reservation</u>		
Durango	2		Canyon de Chelly	20	
Mesa Verde	2		Kayenta	5	
	<u>4</u>	1.5%	Tuba City	9	
			Window Rock	5	
				<u>39</u>	14.5%
Grand Canyon N. Rim	4	1.5%	Grand Canyon S. Rim	32	11.9%

Source: Management Research, Armour Research Foundation

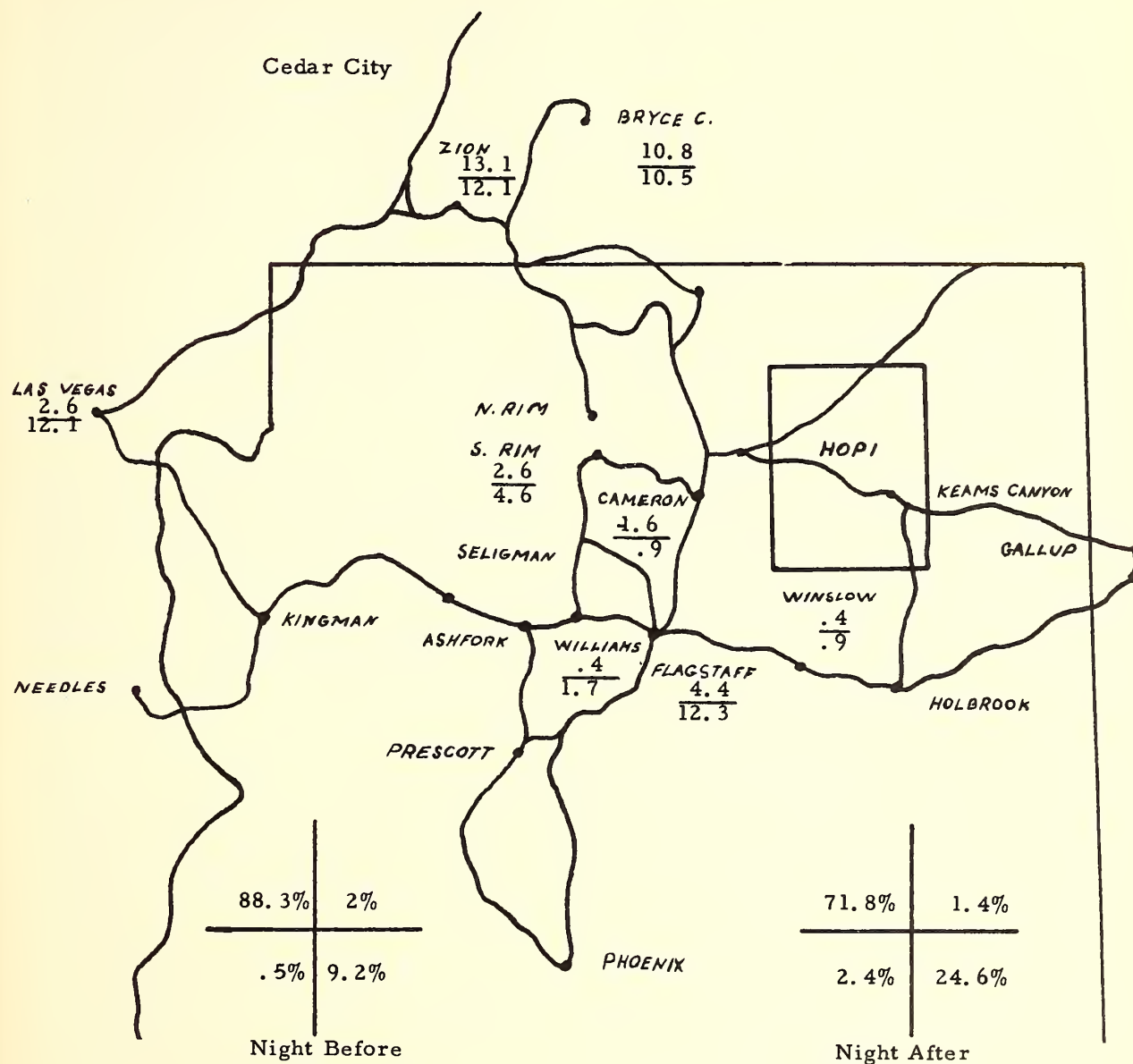
EXHIBIT 18
MAJOR STOPPING PLACES OF GRAND CANYON
NORTH RIM VISITORS*

<u>Town</u>	<u>Night Before</u>		<u>Night After</u>	
	<u>%</u>	<u>Total</u>	<u>%</u>	<u>Total</u>
<u>Under 100 Miles</u>				
Kanab	22.3	10,600	7.1	3,360
Jacob Lake	12.5	5,900	1.9	900
<u>101-150</u>				
Zion Nat. Park	13.1	6,200	12.1	5,730
<u>151-200</u>				
Cameron	1.6	760	.9	430
Bryce Canyon	10.8	5,100	10.5	4,960
St. George, Utah	1.9	900	3.3	1,560
Cedar City, Utah	1.2	570	2.8	1,330
Panguitch, Utah	4.9	2,300	1.7	800
<u>201-250</u>				
Flagstaff	3.7	1,750	11.8	5,600
South Rim	2.6	1,230	4.6	2,180
Oak Creek Canyon	.7	330	.5	240
Richfield, Utah	1.3	620	.5	240
<u>251-300</u>				
Las Vegas	2.6	1,230	12.1	5,730
Williams	.4	190	1.7	800
Winslow	.4	190	.9	430
Sub Total	80.0	37,870	72.4	34,290
Over 301	20.0	9,457	27.6	13,037
TOTAL		<u>47,327</u>		<u>47,327</u>

* 1961 attendance with 1954 distribution

Source: Arizona Highway Department

Exhibit 19
NORTH RIM APPROACH AND DEPARTURE
ROUTES



Town
Night Before
Night After

Source: Management Research Division, Armour Research Foundation
Plotted from Grand Canyon Travel Survey.

<i>Grand Canyon Rim</i>	<i>Approach</i>	<i>Departure</i>	<i>Traffic Volume</i>	<i>Prospects</i>
North	Southeast	North	Low	High
North	Northwest	South	Moderate	High
South	Southeast	West	High	Medium
South	West	East	High	Medium

In general, the origins and destinations mentioned by tourists on the way to and from the canyon in the reservation traffic survey agreed very well with the gross patterns of travel developed in the study team's traffic analysis.

The Hopi Tourist Potential from the Grand Canyon Was Estimated at 25,000 Vehicles Annually

Exhibit 20 shows the development of the estimated 25,000 cars the Hopi Reservation will acquire from the Grand Canyon. Visitors are unlikely to back-track to see the reservation. Consequently, the tourists considered in the analysis were only those located either at the Grand Canyon intending to travel east or those in Holbrook and eastward on their way to the Grand Canyon. A major difficulty is estimating the ultimate effect of promotional activities in attracting visitors at these locations.

In the case of Gallup, the tourist bound for the Grand Canyon can choose either U.S. 66 or Indian Route 3 and have the same distance to travel. If distance were the only criterion in selection of route, the traffic between these two points would probably divide equally. However, U.S. 66 is better known,

has more facilities and offers the attraction of the Petrified Forest. On the other hand, some time could be saved using the reservation route and its attractions will be new to many tourists. In view of these alternatives, 20 percent of the traffic originating in Gallup was established as the maximum which could be acquired from U.S. 66 at that location. Exhibits 16 and 17, the Hopi traffic survey origin and destination summaries, show that slightly more westbound visitors spent the preceding night in a motel beyond Gallup than a motel in Gallup. The reverse was true for visitors going east; more remained overnight in Gallup than proceeded to a motel beyond Gallup. Percentages reflecting these differences were applied to the "East of Gallup" traffic in Exhibit 20.

In the case of Holbrook, only four reservation vehicles originated there and only four were destined for that city. These figures are undoubtedly due to Holbrook's 61-mile distance liability with respect to the Grand Canyon. Nevertheless, Holbrook is the closest city to the reservation on U.S. 66 and has a high Hopi orientation. It was estimated that a maximum of 10 percent of those stopping in Holbrook for the night on their way to the Grand Canyon could be induced to take the reservation route. Holbrook does not compete well with Gallup as a destination so that only 5 percent of parties staying overnight there were assigned to the Hopi route.

Visitors going to either the north or south rim of the canyon were treated in the same manner. However, visitors coming from the north rim were con-

EXHIBIT 20					
RESERVATION TRAFFIC POTENTIAL FROM GRAND CANYON					
<i>South Rim Westbound</i>	<i>% Rim</i>	<i>Annual Vehicles</i>	<i>% Reservation Route</i>	<i>Annual Vehicles</i>	
East of Gallup	7.8%	23,400	25%	5,850	
Gallup	6.4%	19,200	20%	3,840	
Holbrook	7.3%	21,900	10%	2,190	
<i>Eastbound</i>					
East of Gallup	11.2%	33,500	20%	6,700	
Gallup	4.3%	12,880	25%	3,220	
Holbrook	2.9%	8,600	5%	430	
<i>North Rim Westbound</i>					
East of Gallup					
Gallup	9.2%	4,350	20%	870	
Holbrook					
<i>Eastbound</i>					
Flagstaff	16.9%		0%		
East on 66	7.7%	3,640	50%	1,820	
				24,920	7.15%
Source: Grand Canyon Travel Survey. Estimates and compilation Management Research Division, Armour Research Foundation					

EXHIBIT 21
PROJECTED HOPI TOURIST VOLUME (VEHICLES)

Month	South Rim	North Rim	Intrastate	All Others	Total	Total Predicted Daily Avg.	Current Daily Avg.
Jan.	576	..	270	210	1,056	34	11
Feb.	600	..	294	220	1,114	40	13
Mar.	1,000	..	478	295	1,773	57	19
Apr.	1,354	..	637	360	2,351	78	27
May	1,730	159	930	543	3,362	108	36
June	3,760	552	2,102	1,427	7,841	261	86
July	4,260	692	2,450	1,710	9,112	294	95
Aug.	3,940	705	2,295	1,658	8,598	277	90
Sept.	2,160	434	1,288	971	4,853	162	52
Oct.	1,560	148	820	486	3,014	97	22
Nov.	770	..	368	250	1,388	46	15
Dec.	520	..	318	230	1,068	34	11
	22,230	2,690	12,250	8,360	45,530	Total Vehicles	

Source: National Park Service, Arizona Highway Department. Computation and assignment of traffic to reservation routes by Management Research Division, Armour Research Foundation

sidered much more apt to use the reservation routes because of the substantial saving of distance. Thus, half of the departures from the north rim for points well east on Route 66 were assigned to Indian Route 3.

The Hopi Reservation Can Attract Traffic From Within Arizona, Southern Utah, and Miscellaneous Other Sources in the Amount of 20,000 Vehicles

The Grand Canyon is certainly the largest and most predictable source of reservation traffic, but in addition there is substantial intrastate touring in Arizona. This tourism is increasing with the State's rapid population growth. In addition to this, there is the traffic from the southern Utah parks and from individuals visiting the Glen Canyon Dam. In the event that Lake Powell develops into a recreation area there will be further generation of traffic to and from Page. An estimate of this traffic which could be attracted to the reservation is 20,000 vehicles, as seen in Exhibit 21. In estimating the amount of traffic to be obtained from the sources mentioned above, care was exercised to avoid double counting, since many of those visiting the Grand Canyon also visit these areas as well.

The Study Team Estimates That Approximately 12,000 Intrastate Tourists Can Be Attracted to the Reservation

In 1961, the Grand Canyon recorded 49,000 car entries of Arizona residents. These residents came largely from the population concentration south of Route 66 in the Phoenix area, and undoubtedly better than 50 percent visit other attractions on their way to and from the Grand Canyon. This is confirmed by the fact that the Arizona State Development Board and the Northlands Association have

for a number of years promoted circular tours through Holbrook, Flagstaff, Grand Canyon, William and Phoenix. Based on these findings it is estimated that approximately 12,000 vehicles could be attracted to the reservation simply by its being included in the circular tour and promotion in the Phoenix area. These 12,000 vehicles represent only 25 percent of the annual intrastate visitors to Grand Canyon.

Visitors to Bryce Canyon and Zion National Parks Could Be Attracted to the Reservation to the Extent of 3,900 Vehicles

Tourists visiting Bryce and Zion National Parks in 1961 totaled 792,000. Using a car occupancy figure of 3.3 persons per car this results in an average vehicle entry for these parks of 240,000 annually. Since the north rim figure for the Grand Canyon was only 47,000, this means that 193,000 of these entries have not been considered in our traffic analysis so far. If, as in the case of the north rim, 25 percent of this traffic will eventually move east on Route 66, the reservation should capture at least 2 percent of the total visitors to these parks and possibly more due to the similar distance advantage. This would amount to 3,900 vehicles annually, and since these facilities do not close during the winter months they will make up for the lack of traffic from the Grand Canyon north rim to some extent.

Other Traffic Through Keams Canyon Probably Will Reach 4,400 Vehicles Annually

Other forms of traffic not specifically discussed previously amounted to 4,000 vehicles annually on the basis of the traffic survey. Increasing this by about 10 percent for the effect of promotion would conservatively bring this total to 4,400 cars yearly.

EXHIBIT 22
SEASONAL INFLUENCE
NORTHERN ARIZONA TOURISM

<i>Place (% Total)</i>	<i>Winter</i>	<i>Spring</i>	<i>Summer</i>	<i>Total</i>
Canyon de Chelly	9%	21%	59%	11%
Grand Canyon	9%	14%	65%	12%
Petrified Forest	9%	13%	69%	9%
Route 66	13%	22%	54%	11%
<i>Place (Seasonal Factor)</i>				
Canyon de Chelly	1.0	2.34	6.55	1.22
Grand Canyon	1.0	1.55	7.22	1.33
Petrified Forest	1.0	1.45	7.67	1.0
Route 66	1.0	1.70	4.15	.85
<i>Definition of Seasons</i>				
Winter	Nov. 30–March 15			
Spring	March 16–May 24			
Summer	May 25–Sept. 27			
Fall	Sept. 28–Nov. 29			
The seasonal factor is obtained by setting winter equal to one and dividing the winter percent of total into percent total for other seasons.				
Source: Park Superintendents, Arizona Highway Department. Developed by Management Research Division, Armour Research Foundation.				

The Hopi Traffic Potential Is in the Area of 45,000 Vehicles or 148,000 Visitors Annually, but Is Highly Seasonal

At the present time, some 15,000 vehicles annually are passing through the reservation, based on the figures gathered during the Hopi traffic survey. Approximately 284 interviews were held during a five-day period the last week in August. This represented roughly 60 percent of the daily tourist traffic as estimated by car counts. Monthly figures were thus developed and expanded on the basis of the Grand Canyon annual distribution of visitors.

The estimate of a potential tourist traffic volume of three times the present amount of reservation travel, or 45,000 vehicles, is predicated on vigorous promotional activities which will be required to overcome the lack of knowledge concerning the area on the part of the average traveler. Briefly reviewing the source of this traffic, it consists of 7 percent of the total Grand Canyon car entries or 25,000 vehicles, 2 percent of the car entries to southern Utah parks or 3,900 vehicles, 25 percent of intrastate trips to Grand Canyon or 12,000, and a 10 percent increase in traffic from all other sources or 4,400 vehicles. Vehicle numbers multiplied by 3.3 persons per car result in a total of 148,000 visitors to the reservation.

It is not enough that 45,000 cars can be induced to travel over Route 3 every year; they must be persuaded to stop, see and spend. If all the occupants of these cars were to actually spend some time exploring what the reservation has to offer, they would make it the third largest Indian attraction in the Southwest, exceeded only by Mesa Verde and Montezuma Castle.

Vehicle entries at Canyon de Chelly National Monument 70 miles away are about 8,000 annually, reflecting its location at the end of a 40 mile dead-end road. Considering that Route 3 is not out of the way for many travelers and that concrete points of interest do exist on or near its course, the figure of 45,000 vehicles per year is considered obtainable. Tourism in the area is growing rapidly, as indicated by population trends and the steady expansion of the traditional parks, so that the present estimate of potential can be expected to increase with each passing year.

The Summer Arizona Tourist Traffic Is Six to Seven Times Greater Than Winter Tourist Traffic

Exhibit 22 indicates the seasonal variation at two major attractions in northern Arizona; Route 66, and one small attraction near the Hopi Reservation. The annual variation from winter to summer ranges from six and one-half times at Canyon de Chelly to slightly more than seven and one-half times at the Petrified Forest, as seen in Exhibit 22. The slightly lower variation at the Canyon de Chelly may be due to the fact that 35 percent of visits are from the State of Arizona. It is interesting to note that another 25 percent of these visits are from California and a further 13 percent are from New Mexico, suggesting a somewhat lower reliance on national tourism than the Grand Canyon.

In Exhibit 21, the total estimated traffic potential through the reservation is distributed according to month and it can be seen that it begins to collapse very rapidly in September and to build up rapidly in May. Road conditions in the winter will further

hamper tourism and it is not unlikely that the daily foreign traffic volume may drop to zero for short periods of time.

Reservation Traffic Potentials Were Converted to Dollar Potentials

The tourism vehicle and visitor potential was converted to a dollar potential using the traffic survey results and other studies of tourist spending habits. Some visitors to the reservation will not stop at all, others will remain for only an hour or so to buy a meal, gasoline, a souvenir or see the villages, and still others will remain overnight. Estimates of the economic contribution of each class of visitor were made. These expenditures were then translated into required facilities and jobs.

Estimated Expenditures of Hopi Reservation Visitors Compare Favorably with Those of Other Western Tourists

The average daily expenditure per car party reported to the traffic interviewers was \$26.70 per car. At the car occupancy rate of 3.3 persons, also found in the survey, the expenditure for each individual was \$8.10 per day. In a study conducted by the Idaho Chamber of Commerce in 1960, a comparison of tourist expenditures in seven western states gave the following data:

Idaho	\$9.08 per person per day
Montana	8.91 per person per day
Arizona	8.90 per person per day
Texas	8.19 per person per day
Washington	8.00 per person per day
Oregon	6.60 per person per day
California	8.85 per person per day

Reservation expenditures are, therefore, considered in line with those of other western tourists.

Up to Twenty Percent of Motorists Passing Through the Reservation Will Desire Overnight Accommodations

Reservation tourists were asked whether they would remain overnight if good accommodations were available. Eighty-eight percent answered "yes." This response is regarded as a considerable exaggeration as it does not compare with statistics from other areas. It is more likely an expression of good will than of a potential choice. Exhibit 23 indicates the number of visitors to nearby Canyon de Chelly National Monument and the number of those remaining overnight in the Thunderbird Lodge. Those staying in the lodge amounted to 20 percent of total visitors. In comparison with other studies this appeared representative of tourist habits in the area.

It Is Estimated That Forty-Eight Percent of the Reservation Visitors Will Purchase Meals

The 20 percent of visitors remaining overnight can be expected to purchase two meals. An origin destination study conducted by the Arizona Highway Department in 1958 indicated that approximately 18

EXHIBIT 23 VISITORS TO CANYON DE CHELLY NATIONAL MONUMENT

Month	1961 Day Visitors and Campers	Lodge	Total
Jan.	367	118	485
Feb.	782	283	1,075
March	1,008	473	1,481
April	1,695	646	2,341
May	2,520	561	3,081
June	3,131	526	3,657
July	3,845	437	4,282
Aug.	3,860	720	4,580
Sept.	2,118	617	2,735
Oct.	1,322	551	1,873
Nov.	449	196	645
Dec.	127	125	252
TOTAL	21,224	5,253	26,477
Lodge occupancy as a percent of total visitors 19.8%			
Source: Superintendent, Canyon de Chelly National Monument			

percent of the westbound Route 66 traffic stopped in Holbrook for meals. The number of motorists stopping in the reservation for this purpose will be higher since there are no other alternative stops. If traffic flow through the reservation is fairly even from 9:00 a.m. to 6:00 p.m., about one-third of the visitors will be passing through at meal times. Twenty-eight percent was added to the 20 percent remaining overnight for a total demand of 48 percent of all tourists for meals.

Eighty Percent of Reservation Tourists Will Want to Purchase Gasoline

Assuming that the tourist filled his tank in either Gallup or on Route 89, he will require 6 to 10 gallons of gasoline by the time he reaches Keams Canyon. Stops for meals, lodging, sightseeing or the use of restrooms will lead logically to the purchase of gasoline, particularly in view of the many warnings given motorists to maintain a full tank while driving in the desert. The 88 percent "yes" response to the traffic survey question about stopping overnight was interpreted to mean that approximately the same percentage of cars would stop for some reason.

It Was Estimated That Forty Percent of Reservation Visitors Would Purchase Arts, Crafts and Guide Services

It was estimated previously that 48 percent of all visitors would stop for meals or lodging. These individuals will be on the reservation for the longest period of time and will be exposed to opportunities to purchase items in and near the tourism facilities. Arts and crafts and the villages are among the leading tourist attractions. Since the enjoyment of these things is the primary reason tourists will come to Hopiland, it is reasonable to assume that they will be

inclined to buy. Forty percent of all reservation visitors are expected to make some expenditure in this manner.

Total Annual Tourist Expenditures Were Estimated At \$424,000 for a Traffic Level of 45,500 Vehicles

Motel accommodations at nearby attractions range from \$9.00 to \$12.00 per night. Meals can be had in Keams Canyon at from \$1.00 to \$1.50 per person and gasoline is roughly 35¢ per gallon. Studies of tourist habits in other areas indicate that about 22 percent of expenditures are for side trips and shopping. Figures from the Grand Canyon Travel Study indicate that tourists spend approximately 20 percent on such items. A figure of \$5.00 per car was selected by the study team for expenditures on arts, crafts and tours. Thus Hopiland tourist expenditures would be as follows:

<i>Motel:</i> 20% of 45,500 cars @ \$10.00 per night	\$91,000.00
<i>Restaurant:</i> 20% of 45,500 cars two meals at a total of \$2.50 and 28% of 45,500 cars one meal at \$1.50 (3.3 persons per car)	138,000.00
<i>Gasoline:</i> 80% of 45,500 cars 8 gallons @ 35¢ per gallon	102,000.00
<i>Arts, crafts, tours:</i> 40% of 45,500 cars @ \$5.00 per car	93,000.00
<i>Total possible expenditures</i>	<u>\$424,000.00</u>

For the parties remaining overnight these expenditures would amount to \$26.05 which agrees closely with the average uncovered in the traffic survey of \$26.07 per car per day.

The Hopi Indian Tribe Controls a Marketable Tourist Attraction

In this chapter it has been shown that the Hopi Reservation is in a position to acquire traffic from the Grand Canyon, southern Utah, and intrastate sources. The volume of this traffic has been estimated at 45,500 vehicles annually with a variation from summer to winter of approximately eight to one. On the basis of spending habits surveyed and calculations made, these visitors will spend nearly half a million dollars annually on the reservation. The acquisition of this traffic and source of revenue will require planned development and promotion.

RECOMMENDED DEVELOPMENT PROGRAM

Development of the programs and facilities required to take advantage of the reservation's tourism potential and means of attracting visitors and bringing the local attractions to their attention are examined. The economic feasibility of facilities which can provide employment for the Hopi Tribe are dis-

cussed. The dependence of these installations on water is investigated.

Tourists Must Be Informed About the Reservation

Present levels of traffic through the reservation are inadequate for the development of any significant tourist industry. Traffic through the reservation is far below what one would expect on the basis of time and distance saved and in terms of the interesting country through which Indian Route 3 passes. In addition to the lack of general development, the outstanding reason for the scarcity of visitors is the failure to adequately inform travelers about the reservation. There are no signs either on, near, or at a distance from the reservation telling what it is, or where it is. There is very little literature to be found in motels and chambers of commerce dealing specifically with the Hopis.

If anything, the situation on the reservation is less promising. Here the visitor is left without guidance concerning local points of interest, history and activities. Because of the open country, motorists can pass through the reservation at 60 to 70 miles per hour and as a result see nothing at all.

The projected traffic volume for the reservation of 45,000 cars a year is three times the present level of travel. Such an increase is not apt to occur naturally and this estimate has been based on the effectiveness of sales or promotional efforts in such places as Albuquerque, Gallup, Holbrook, the Grand Canyon and southern Utah. Traffic must be actively solicited through the use of road signs, literature, and the goodwill of nearby chambers of commerce, park superintendents and State bodies of various kinds.

Information centers on and off the reservation should be established. All kinds of free national and local publicity should be taken advantage of, as well as the services of tour associations and individual travel agents. The success of the entire enterprise will depend on the ability of the Hopi Tribe to attract the potential volumes of traffic through active dissemination of information.

Visitors Must Be Induced to Stop and See the Reservation

Not only the motorists using Route 3 now, but those encouraged to come that way later must do more than merely pass by. In the present circumstances there is no way in which the tourist can know what there is to stop for, or what might be the most interesting choice of things to see. Keams Canyon, where information could now be obtained, is out of sight for visitors from both directions. The Keams Canyon Trading Post and the park across the road offer some inducement to stop, but once again there is no ready source of information for the traveler short of hunting up someone in the trading post. Most people will not trouble to do this.

In the Trading Post or Park There Should Be a Small Visitor Center Adequately Marked with Lead-Up Signs Where Tourists Can Inquire About the Reservation

A small information center can be manned by one or two Hopis provided with appropriate literature and instructions. To insure that eastbound visitors also have an opportunity to see the reservation before reaching Keams Canyon, a similar center should be established near Oriabi. At that end of the reservation, speed limits near the information center should be reduced so that there is time to make the decision to stop.

Parking Turnouts with Historical Markers Should Be Established near First and Second Mesa

Most visitors will find the villages the most interesting attraction, particularly if there happens to be a ceremony taking place that day. At the present time there is a lack of convenient areas to pull off the road and park, and the roads up to the villages are not easy to negotiate. At each of these parking turnouts there should be some information provided on the villages of that particular mesa. Either historical markers or exhibits such as relief maps or models of the villages might be shown to stimulate interest.

In addition, parking turnouts will provide an opportunity for the employment of guides: Once the visitor has stopped to examine the exhibit, he may be interested in seeing the villages. Indian guides, available to accompany the tourists can offer to take visitors through the various villages for a fee. Usually, tourists do not hesitate to use small tourist-type buses, brightly painted with Hopi designs, to reach the villages. Other tribes use a station wagon for this purpose. If possible, the Hopis should acquire this type of transportation for the tourists. Exhibit 21 indicated that a peak daily traffic volume of 294 vehicles would be obtained. It was estimated that 40 percent or 118 of these vehicles would take village tours and therefore require guides. In addition to the employment of one or more guides at each location, there is an opportunity to stimulate the sales of pottery, basketry and other handicrafts which could be purchased in the villages.

Where it is practical, these parking areas could be located near existing trading posts to stimulate business. The advantage of this type of development is that it is relatively cheap and will get people to stop. As with other developments, they must be well marked. The visitor information center in the Third Mesa can serve the same function as the turnouts in First and Second Mesas.

Tourists Should Be Encouraged to Remain As Long As Possible

The longer the visitor remains, the larger contribution he will make to the tourist economy. The parking areas previously discussed are primarily to

divert those people with the least time and the least general interest. The two visitor information centers should organize programs which will hold visitors in the area for relatively long periods.

Visitor Centers Can Organize Longer Tours, Riding Trips, and Provide Opportunities to See Ceremonies, Rodeos and Other Current Events

Trips to the various ruins, including Awatovi, or horseback riding along the mesas or canyons can take the better part of the day and can be highly rewarding to the tourist. Trips to the more distant canyons are potentially interesting and therefore profitable.

The frequency of Hopi ceremonies is of course entirely up to the village priests. However, the visitor center should be informed on their scheduling and make arrangements for the tourist to participate. Events and demonstrations can be organized such as rodeos or contests and tours of the schools, BIA facilities, and the Public Health Service operations should be included. In general, the visitor center should see to it that everyone does or sees something. In this way the reputation of the reservation will grow through word of mouth which, in the end, is very effective.

Tourists Should Know and Appreciate Hopi Arts and Crafts

The Hopis' reputation as artists is well deserved. The expression of their skill in silver, pottery, basketry and wood carving draws tourist interest wherever it is displayed. In the categories of arts, crafts and tours the study team has estimated that an income of \$93,000 per year can be derived based on estimated expenditures per car.

The Present Hopi Arts and Crafts Enterprises Are Either Poorly Marked or Located

The Hopi Silvercraft Guild is located in Oriabi off the highway and entirely out of sight. Although there is a sign five miles to the west it is not very large nor informative. Traders such as Paul Saufkie or Hal Sekakuku are in better locations, but also have inadequate lead-up signs. Emory Jr. has a favorable location and good sign, but could use additional signs both to the east and west. Those practicing their craft in the villages have no signs at all and very poor locations.

Individual traders and craftsmen would gain much by pooling some of their marketing efforts. The visitor centers will naturally furnish tourists with information regarding the purchase of handicraft items, but the traders themselves can pool their resources to improve signs and to provide uniform and attractive literature about their activities.

There Has Been Considerable Discussion Concerning a Hopi Arts and Crafts Center

The idea of combining many of the Hopi artists into a single organization with separate quarters has been discussed locally and with the Arts and Crafts

EXHIBIT 24
RESERVATION MOTEL ANNUAL AVERAGE PERCENT OCCUPANCY

NUMBER OF UNITS	60	50	40	30	20	10
% occupancy at 15,000 vehicles/an	13.9	16.6	20.8	27.8	41.7	60.4
30,000 vehicles/an	20.5	24.6	30.7	40.9	52.0	73.8
45,000 vehicles/an	41.4	46.7	52.2	60.6	74.0	92.3

Source: Management Research Division, Armour Research Foundation.

Board in Washington for some time. This plan has a number of advantages. First of all, there is the problem of selling the better goods at the prices they command. Displays showing the steps in manufacture of a basket or silverware or Kachina Dolls combined with the opportunity to see the actual craftsman at work would increase tourist appreciation and thereby willingness to buy. It would be wasteful to establish such displays in many separate locations.

Second, one large, well run center with adequate financial resources can certainly do a better marketing job than a dozen entrepreneurs scattered over 40 miles of highway. There is a clearcut choice here between economic self-interest and individual rivalries. There is, of course, no way to legislate such a center into existence but those who can be persuaded to join in organizing one should profit from their cooperation.

Tourists Must Have Some Place to Eat and Sleep

The necessity for accommodations on the reservation is obvious and these amenities will ultimately provide the largest source of income and employment to the Hopi Tribe. What eating places and overnight accommodations there are at the present time are considered substandard. The greatest inhibition to tourist travel through the area is either the knowledge or the apprehension that there will be no adequate place to eat and sleep. There is a dilemma here in that visitors will not come without these facilities and that the facilities cannot be supported without the visitors. Three types of facilities are required: campgrounds, a motel and a restaurant.

The Present Keams Canyon Campground Is Too Small and Requires Additional Facilities

Although the Keams Canyon campground has electricity, running water, tables and fireplaces, there will not be sufficient room for campers, particularly with trailers, once the anticipated traffic volume develops. Showers could be added to the present facilities.

Additional campground sites should be developed in the vicinity of Second and Third Mesa. Furnishing utilities at these additional campsites might be difficult although a water supply and electricity are available in Oriabi. It is most likely that the campgrounds could be combined with the parking areas

previously discussed so that an economy of construction would be obtained and the greater activity at these sights would encourage others to stop.

Motel and Restaurant Facilities Should Be Constructed Together

The present trend in construction is to provide a restaurant in connection with a motel. Since the restaurant will be serving local population in addition to motel occupants, food sales are likely to be greater than room sales so that the restaurant will have some ability to sustain the rest of the operation during the slack winter season. These facilities should approach the quality of those found on Route 66 and every care should be taken to see that they are clean, well managed and attractive to travelers.

News of an interesting place to stay travels fast, whereas poor facilities usually do a poor business regardless of the monopoly they enjoy in an isolated area. Certainly the Hopi Reservation as a place to visit will be judged largely in terms of these accommodations. There are a number of options as to the construction of motel and restaurant accommodations available. New facilities can be constructed separately or some combination with and upgrading of existing facilities can be undertaken if suitable arrangements between the owners and the tribe can be made.

There Are Two Possible Locations for New Motel and Restaurant Development

Location is the prime consideration bearing on the success of motel operations. In general, a motel should be located at either a major road junction or near a metropolitan area. The reservation, of course, provides neither of these options. The locations considered, in the order of attractiveness by the study team were, first on Second Mesa near the present campground and second in Keams Canyon.

The Second Mesa Location Has an Excellent View and Central Location

The view of the plains to the south of the reservation from the spur of Second Mesa about a mile west of Saufkie's trading post is quite attractive and would certainly have appeal for tourists. This location is midway between the eastern and western boundaries of the reservation so that tourists are centrally located with respect to the various attrac-

EXHIBIT 25
MOTEL-RESTAURANT OPERATING PROJECTIONS

NUMBER OF UNITS	60	50	40	30	20	10
% Capacity						
1962 Traffic	13.9	16.6	20.8	27.8	41.7	60.4
Room sales	....	....	....	\$ 30,400	\$ 30,400	\$ 22,000
Restaurant sales	....	....	....	46,000	46,000	23,000
Total				\$ 76,400	\$ 76,400	\$ 45,000
Room profit (L)				\$(10,000)	\$(1,500)	\$ 2,600
Restaurant profit (L)				3,600	3,600	1,800
Total (L)				\$ (6,400)	\$ 1,100	\$ 4,400
% Capacity						
2 x 1962 Traffic	20.5	24.6	30.7	40.9	52.0	73.8
Room sales	....	....	\$ 44,900	\$ 44,900	\$ 37,900	\$ 26,900
Restaurant sales	....	....	69,000	69,000	46,000	23,000
Total			\$113,900	\$113,900	\$ 83,900	\$ 49,900
Room profit (L)	....	....	\$ (11,000)	\$ (2,700)	\$ 2,300	\$ 5,000
Restaurant profit (L)			5,400	5,400	3,600	1,800
Total profit (L)			\$ (5,600)	\$ 2,700	\$ 5,900	\$ 6,800
% Capacity						
3 x 1962 Traffic	41.4	46.7	52.2	60.6	74.0	92.3
Room sales	\$ 90,700	\$ 85,200	\$ 76,200	\$ 66,300	\$ 54,000	\$ 33,700
Restaurant sales	138,000	115,000	92,000	69,000	46,000	23,000
Total	\$228,700	\$200,200	\$168,200	\$135,300	\$100,000	\$ 56,700
Room profit (L)	\$ (4,700)	\$ 0000	\$ 4,600	\$ 7,900	\$ 10,300	\$ 8,400
Restaurant profit (L)	10,700	8,900	7,200	5,400	3,600	1,800
Total profit (L)	\$ 6,000	\$ 8,900	\$ 11,800	\$ 13,300	\$ 13,900	\$ 10,200
Room charge \$10.00/night						
Variable costs 50% of sales						
Fixed costs 23% of sales at full capacity						
Restaurant profit 7.8%						
Source: Management Research, Armour Research Foundation						

tions and have the opportunity to make a decision to stop on the basis of what they have already seen.

On the other hand, the development of this site would be quite expensive since no roads or utilities exist at the present time. Water would be the most serious handicap since a well would have to be drilled down from the mesa top at considerable expense. Lack of adjacent supporting facilities such as gas stations, telephone service, and adequate shopping for groceries are additional hardships. To the extent that the motel and restaurant would have to depend on local trade for some of its support off-season, it would be in a poor location to attract business from Keams Canyon where most of its non-tourist customers are concentrated.

A Location in Keams Canyon Has Supporting Facilities

Compared to the Second Mesa location, Keams Canyon offers little in the way of aesthetics and does not enjoy the central location. However, it has the concrete advantage of being situated near a gas station, garage, store, and utilities. Motel construction costs would doubtless be lower at Keams and the problems of land acquisition less severe than those in Second Mesa. As to the relative ability of the

two sites to attract business, it has already been noted that Keams Canyon will acquire more of the local trade, although a trip out to Second Mesa for dinner might provide something of a diversion.

The Feasibility of Various Sized Motels Was Investigated

The daily traffic figures from Exhibit 21 were used to compute the monthly percent occupancy which would be experienced by motels ranging in size from 10 to 60 units. These monthly percentages were then averaged to arrive at the figures of average annual percent of capacity shown in Exhibit 24. This was done for the current Keams Canyon traffic volume and for volumes two times and three times the present level. A volume of three times the present reservation traffic has been projected as reasonable with the success of promotional efforts.

Typical Motel and Restaurant Combinations Were Developed for Operating Predictions

The motel used to develop the operating projections in Exhibits 24 and 25 had the following characteristics:

- Ten dollar per night room charge,
- Fixed costs 23 percent of sales at 100 percent capacity,
- Variable costs 50 percent of sales at all capacities,
- Restaurant size directly proportional to number of rooms (2 restaurant seats per motel room),
- Restaurant profit 7.8 percent for all sizes,
- Cost of motel and restaurant \$10,000 per unit,
- Cost of motel without restaurant \$8,000 per unit.

Business Service Bulletin No. 66 published by the Small Business Administration in 1954 gives the ratio of variable expenses to sales for all motels as 45 percent and fixed expenses to sales as 26 percent. A survey for a large motel in the Middle West recently indicated ratios of 20 percent of sales for fixed costs and 50 percent for variable costs. The figures of 23 percent and 50 percent used in this study are based on the expectation that the maximum amount of local labor will be employed in any reservation motel and that fixed costs will tend to be high due to the isolated location. The largest component of the fixed costs is depreciation and it is assumed that this cost will be equal to the payments required to meet any mortgage obligations.

In the case of the restaurant, a survey by a national accounting firm specializing in the motel and restaurant field indicates that the profit margin of restaurants, doing a food business only, averages 7.8 percent. The largest part of the cost in the restaurant business is variable, consisting of the cost of food-stuffs and the wages paid to employees. Capital costs of the restaurant are included in the motel.

The projections made in Exhibit 25 are based on the demand created by tourists only, and do not take into account local patronage or business travel. In the case of the restaurant, local patronage will be of considerable assistance but will be of little consequence to the motel.

The new 12-unit motel at Canyon de Chelly cost approximately \$8,000 per unit, furnished. This figure agrees well with those published by Horwath & Horwath in the restaurant and motel study mentioned. Motels with restaurants cost about \$10,000 per unit as a national average. In the restaurant case, this works out to about \$1,000 per seat and sales per seat are in the neighborhood of \$1,200 annually.

At Present Traffic Levels a Motel and Restaurant Enterprise Is Marginal

In Exhibit 25 it will be seen that a motel of 20 units can make a small profit, but advancing to one of 30 units creates a loss of \$6,400 at present traffic levels. Enlarging the restaurant accomplishes nothing since there is no additional demand. The present Keams Canyon Motel (16 units) and restaurant probably show a better profit figure than the one indicated due to local patronage and extremely inex-

pensive construction. However, as noted previously, these facilities are considered to be substandard and even the existing operation might experience difficulty in expanding beyond 20 motel units.

At Twice the Present Traffic Volume or 30,000 Vehicles Annually, a Motel of Thirty Units Could Show a Profit

A potential profit of \$2,700 annually could be shown by a 30-unit motel and the 20-unit motel would be quite profitable as seen in Exhibit 25. Once again, it would not pay to expand beyond the 30-unit level in either restaurant or motel for lack of demand with a traffic volume of 30,000 vehicles annually.

Motels up to Sixty Units Would Be Profitable at the Predicted Traffic Volume of 45,500 Vehicles Annually

When the ultimate Hopi traffic potential of 45,500 vehicles annually is realized, there is a greater choice of scale of operation for motel-restaurant developments. Although maximum net profit will be obtained in a 20-unit motel, the tribe should seek a balance between net profit and gross sales since larger facilities will employ more people and in the event the tribe receives a percentage of the gross from a motel concessionaire, higher sales mean higher council income.

The Basic Motel-Restaurant Problem Is Growth

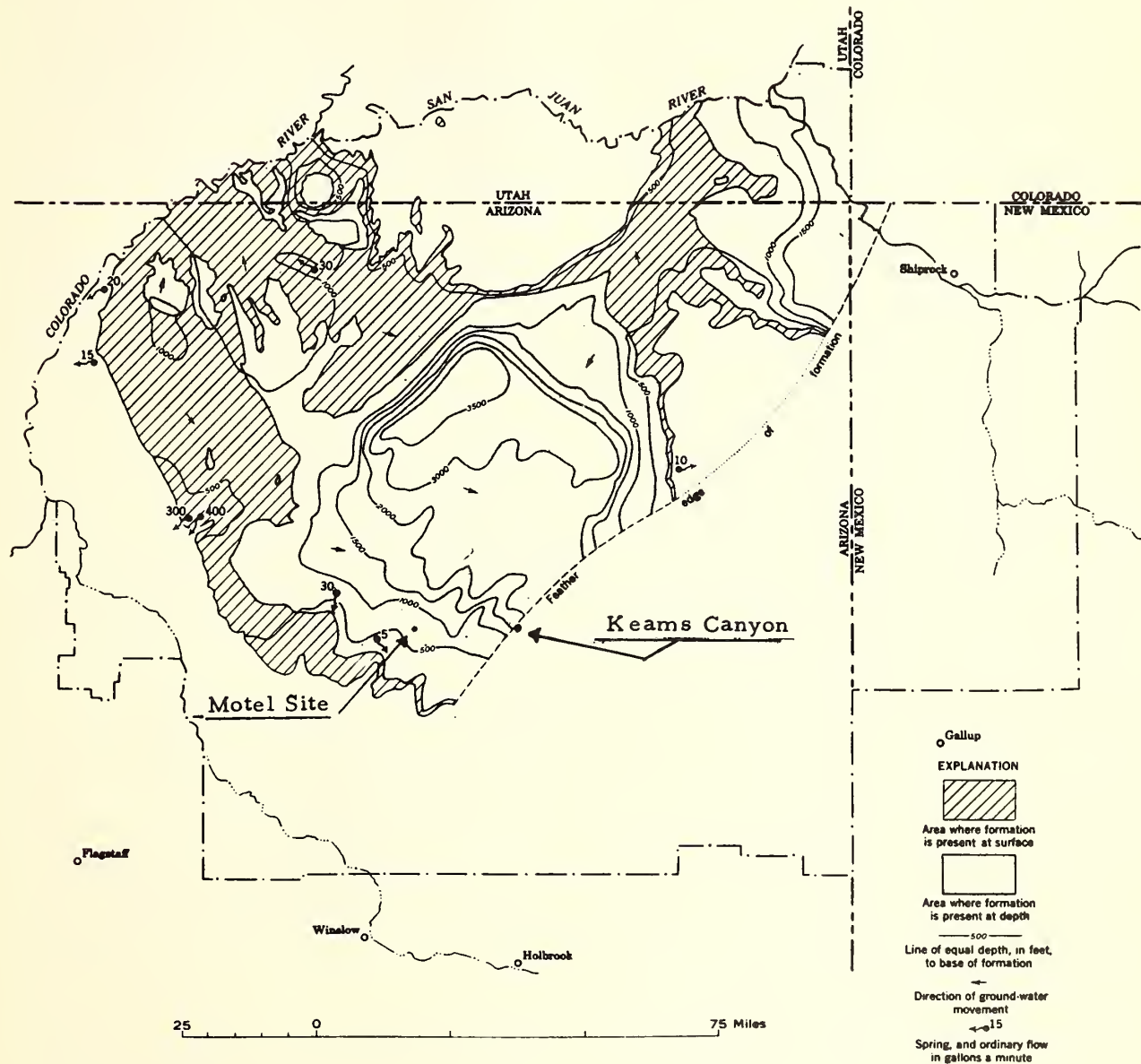
Once higher traffic levels have been reached, an attractive, prosperous motel of about 30 units is a distinct possibility. However, no such motel could be built at the present time without substantial losses being incurred for a period that might run into several years. While no mention of the competition to be experienced from the present motel and restaurant has been made thus far, it must be realized that the existing market simply is not big enough to support two motels and restaurants, although there might be room for more than one operator at higher traffic levels.

Should a competing motel and restaurant be built, the Keams Canyon Trading Company would undoubtedly raise its standards as a means of meeting the competition with the result that both enterprises might sustain ruinous losses before adequate levels of tourism are reached. Consequently, the Hopi Tribe may be compelled to create a degree of monopoly either for the existing operator or some other operator to be selected.

The Construction of a Thirty-Unit Motel Is a Worthwhile Speculation

At the present volume of traffic of 15,000 vehicles, a 30-unit motel would sustain a loss of \$6,400 per year. However, it would experience a profit of \$2,700 per year at twice this traffic volume and be making a profit of \$13,300 per year at three times the traffic as indicated in Exhibit 25. At this point the restaurant could be enlarged and additional

Exhibit 26
RELATIONSHIP OF MOTEL SITE TO THE NAVAHO SANDSTONE



Source: U. S. Geologic Survey

motel rooms added. Although the profit would drop somewhat with additional rooms, there may be justification at that time in terms of even greater demand than has been forecast.

Assuming that it might take three years to increase the reservation traffic volume to 45,000 vehicles annually, a 30-unit motel could recover its losses at the end of the third year and show a profit of \$9,600. If the traffic takes longer to develop at least to the breakeven level the problem would be more serious. However, some risk has to be encountered and a 30-unit operation is much less of a gamble than 40 units which would sustain total losses of \$20,000 during the first three years and would not recover this loss until the end of the fourth year. Although a 30-unit motel might be constructed now on the chance that it would be in an overall profit position three years hence, the better course of action would be to await the results of efforts to increase reservation traffic volumes.

The Return on Investment Will Initially Be Low

At a construction cost of \$10,000 per unit, the return on investment will be about 4.4 percent for the 30-unit motel costing \$300,000 and earning a pre-tax profit of \$13,300 at 60.6 percent of capacity which would be obtained at three times present traffic levels. If the restaurant were expanded to full demand capacity and the motel eventually operated at 75 percent of capacity a profit of \$23,333 could be achieved giving a return on investment of 7.8 percent. Of course a less expensive facility will produce a better return but the construction of such facilities may be a form of false economy when it comes to enhancing the reputation of Hopiland.

Water Is a Critical Factor in the Motel Development Program

Water critically affects all aspects of life in the Hopi-Navaho Reservation Country. Wells with yields as low as three gallons per minute are considered worth drilling in some areas. In general there are two classes of wells on the Hopi Reservation: shallow wells of 100 feet or less drilled into the sandy alluvium near or on the banks of washes, and deeper wells penetrating the various sandstones of the Mesa Verde group and the Cow Springs Sandstone, Dakota Sandstone, and where it is present, the Navaho Sandstone. The shallow wells have extremely low yields on the order of from four to six gallons per minute. The deeper wells, particularly in the Navaho Sandstone, are capable of producing up to 40 gallons per minute and occasionally more. The better wells in this formation are rather far to the west and off the reservation for the most part. Exhibit 26 indicates the manner in which the formation feathers out somewhere between Polacca and Keams Canyon to the east. With respect to a possible motel location on Second Mesa, the formation is shown to be present in the same exhibit.

A Well of Forty Gallons Per Minute Capacity Exists Four Miles East of the Proposed Location

The well at Second Mesa school has been tested to a capacity of 40 GPM. This well is drilled into the Navaho Sandstone and, if anything, the formation should be thicker to the west, although deeper. The well at the Second Mesa school has a disadvantage in that its water tends to discolor food. This is believed to be due to a relatively high concentration of elemental vanadium in the water. This is a rather unusual circumstance and is not a liability of the Navaho Sandstone generally. Vanadium occurs in lenticular or "lens" shaped bodies and it is probable that a well drilled four miles to the west would be outside the boundaries of this area of high mineralization.

Wells should be proved before facilities are erected

It is necessary to establish the water supply prior to the investment of substantial sums of money for a facility such as a motel. Although the characteristics of the various water bearing formations are known, the drilling of any particular well is always a speculation. In the case of wells deep enough to reach the Navaho Sandstone this becomes an expensive gamble, but there is no suitable alternative.

A well near the proposed location should be drilled down from the top of the mesa

A well located at the top of the mesa rather than at its foot 400 feet lower will be more expensive to drill, but there will not be the necessity of laying water lines up the side of the mesa which can be quite difficult in the rocky ground. In addition, obtaining decent frost protection for these lines can run as high as \$5.00 per foot.

Motel Water Requirements Are Within the Capability of Good Wells in the Navaho Sandstone

Demand figures for motels without food services are in the range of 100 to 150 gallons per unit per day. In the case of restaurants, demand is in the range of 7 to 10 gallons of water per person served. In making estimates of the water requirements the study team used the higher rates (150 gal. per unit and 10 gal. per person). On this basis, the demand for the 30-unit motel with a 120-seat restaurant would be:

Motel, 30 x 150	4,500 gallons/day
Restaurant, 465 meals x 10 (120 seat)	4,650 gallons/day
	9,150 gallons/day

A 40 GPM Well Will Produce 57,600 Gallons Daily

Provided a 40 gallon per minute well can be established in the Second Mesa location, the motel will have a water supply which will exceed its normal full demand by more than 600 percent. In the event a well of lower yield is developed the motel could still survive on wells producing somewhat less than 20 GPM.

A Storage Capacity of Approximately 20,000 Gallons Should Be Provided

A storage of 20,000 gallons is considerably more than would be required to stabilize pumping rates and demand, for the motel/restaurant complex. Although there will be sharp system peaks in the morning and evening, this tank capacity is nearly twice the total daily demand. There are several reasons for considering a tank of this capacity. One is to provide for the expansion of the motel and the other is to improve fire protection. The more water available at the site the lower insurance rates will be.

An additional reason for large storage capacity is to take into account any variation in well output under varying degrees of drought, and to hedge against the possibility of being without water for several days due to power or mechanical failure. On these grounds a tank of 30,000 gallons capacity might also be considered since capacity goes up at a considerably higher rate than required construction costs for the tank.

Well Casings Should Be as Large as Can Be Afforded

One criticism which has been made of many of the wells on the Hopi Reservation is that their small casing size, typically six inches, prohibits the installation of adequately large pumps. Particularly in a well of the depth contemplated, it will be desirable to have a relatively large pump and to minimize the loss of head created by small casings.

- *The depth of a well at Second Mesa is apt to approach 1,500 feet*

Exhibit 26 indicates that the base of the Navaho Sandstone formation at the general location selected for the motel development is about 750 feet below the surface. It should be noted that the word "surface" here refers to the surrounding plains rather than the mesa tops. Second Mesa rises approximately 650 feet from the surrounding plateau so that the total depth to the base of the Navaho Sandstone would be 1,500. This agrees with the data on the well at Second Mesa school which has a surface elevation of 5,685 feet and is 800 feet deep. Adding 650 feet for the climb to the mesa this totals 1,450 feet.

The Motel Water System Will Cost Approximately \$50,000

The cost and feasibility of various water programs for the Hopi villages have been thoroughly explored in the excellent report by Johannessen & Girand, Consulting Engineers, prepared for the U. S. Public Health Service in 1961. In the report a well was proposed at Polacca to tap the Navaho Sandstone at a depth of 1,600 feet. The well would have a minimum casing size of 12 inches. These are essentially the characteristics proposed in this study for the well on Second Mesa. The cost estimates were given as follows:

Well and pump	\$33,000
20,000 gallon tank	15,000
Plumbing and controls	3,000
Total	<hr/> \$51,000

The plumbing referred to above is only that immediately associated with the well and does not include any of the inside or outside motel plumbing which is included in the motel construction costs.

A Museum of Hopi History and Culture in Connection With the Awatovi Ruin Could Be Established

The established Pueblo historic sites have museums and exhibits explaining what occurred there. Uninformed and unsupervised tourists at a place of archaeological importance are a threat to its historical record through such activities as pot hunting and, moreover, these tourists do not fully appreciate the significance of what they are seeing. In addition to relating a story about the ruins, a museum is a convenient place to distribute literature and knowledge about other attractions in the area. This museum permits the charge of a fee for the services provided, and it may also offer crafts, souvenirs, and books for sale. Exhibits need not be confined to the ruins themselves but can include information on the region's geology, plant and animal life and anthropology of the Hopis in general. Museums are also convenient locations to conduct research and can derive income from the sale of memberships.

However, museums are also expensive and on the basis of estimates received from the historian at the Whitman National Monument in Washington, a museum to display material similar to that which is contemplated here, and consisting of 5,000 square feet would cost approximately \$197,000. This investment is plainly prohibitive for any private investor in this area so that some other means to finance it must be found. Temporarily, a small museum could be set up in the contemplated motel if space is planned for it ahead of time.

Ultimately, The Hopi Tribe Should Seek National Monument Status for Awatovi

As the national population continues to expand and move into previously remote areas, many sites of historic and cultural significance are in danger of being lost or destroyed. As a means of preserving these important reminders of the past, national historic sites and national monuments are frequently created. As outlined in Exhibit 9, many of the Pueblo ruins of the Southwest have been national monuments for some years.

The Hopis should consider taking steps to make Awatovi a national monument. The advantage to the Hopis of this step would not only be to protect properties of archaeological significance but to ac-

quire the necessary capital, budget and staff from the government agencies to improve the road to the site and prevent further deterioration, so that its potential as a tourist attraction can be fully realized. It is entirely possible that the task of supervising the Awatovi ruin could form the basis for the creation of a Hopi Ranger Service which would later expand its activities to other facets of the local tourism program.

A Definite Procedure for the Creation of a National Monument Must Be Followed

A first step in achieving national monument status for a site is to detail its history and significance in what is known as the "Interpretive Prospectus." This could be an interesting task for a graduate student in American History or Anthropology and who could probably be hired for a very reasonable sum of money. In fact, since the ruin was so thoroughly explored by Harvard University, it may be possible to get such a document from there at no cost to the Hopis. When the prospectus has been submitted it must acquire legislative sponsorship and there are, of course always competing proposals.

The Hopi Tribe Should Consult With the Arizona Congressional Delegation

A good starting point for the national monument program would be with the State's Senators and Congressmen. There are probably several who are recognized for their interest in southwestern history and who appreciate the contribution such a move could make toward the improvement of the reservation economy.

Entrepreneur Ownership of Tourism Facilities Is Recommended

At the present time, the tribe has net assets of about \$5,000. These funds are administered for the tribe by the Bureau of Indian Affairs, as neither the Tribal Council nor the Economic Development Committee has a member with financial experience. To the study team's knowledge, the tribe has no financial backing or line of credit other than government revolving loan programs and a small income from reservation traders. Not only is there a lack of capital, but there is no organization established to spend and administer it.

The Bureau of Indian Affairs cannot enter into business arrangements with the tribe without involving itself in conflict of interest problems, and the Tribal Council and Economic Development Committee are not essentially business organizations.

A main concern of the Tribal Council over the next several years should be to form an effective government, particularly in view of the far-reaching problems it will face at the conclusion of the boundary dispute with the Navaho Tribe. Should the settlement of this dispute make it possible for the Hopis to exploit their mineral resources, the administration of income from this source will be a major preoccupation.

Because of these factors, the study team is of the opinion that the interests of the Hopi Tribe will best be served through motel/restaurant lease and concession arrangements with outside operators, rather than through tribal ownership and operation. There is a financial reason for this recommendation as well as those reasons already advanced. It is uncertain that a motel-restaurant operation on the reservation will be in a profitable position from the start. It will have to develop in stages as the traffic volume is built up over a period of years.

Even if it were possible for the tribe to borrow the necessary funds an unforeseen working capital crisis could easily develop since the equity involved is so small and the investment costs high. An outside operator with counterbalancing profitable interests can sustain the losing venture until increased business makes it self-supporting. This the Hopi Tribe is in no position to do.

A Labor Survey of Twelve Percent of the Hopi Work Force of 900 Revealed Several Significant Factors Influencing Reservation Employment

The census conducted by the study team indicated a reservation population of about 4,000 persons living in some 900 families. Although there are households with more than one employable person, there are also those with no employable person's due to age or some other factor. (Nearly 60 percent of the population is 20 years of age or younger, and there are significant numbers of elderly Hopis.) It is apparent that these factors indicate that one breadwinner per household is a representative characteristic of the labor force.

During the conduct of the census, 12 percent of all heads of Hopi families were interviewed to determine the labor skills available on the reservation for tourism and the levels of unemployment and education prevailing. Questions of an economic nature are regarded as highly personal among the Hopis, however, and the response was smaller than expected. However, the information obtained agreed fairly well with other estimates regarding unemployment. In general, the questionnaire was answered by the less "traditional" Hopis and those who probably enjoy the better skills and income.

Typical reservation employment patterns make it difficult to separate employment from unemployment.

The Hopi breadwinner may have a trade he follows when the opportunity permits, but most of the opportunities are off the reservation or are highly seasonal. When not working for wages, most Hopis have a farm or ranch which furnishes some support. Work on the ranch is often for lack of any alternative and can be regarded as concealed unemployment in that the individual is continually looking for work at the same time.

RESERVATION LABOR SURVEY

Labor survey figures indicate an unemployment level of nearly 40 percent. The labor survey results were as follows:

Employed	27%
Ranch work	28%
Unemployed	31%
Not answered and other	14%

Dividing the "ranch work" category into genuine employment and concealed unemployment, we would have:

Employed	41%
Unemployed	45%
Not answered and other	14%

The category "not answered and other" includes retired persons, housewives, and incomplete questionnaires.

Again it should be emphasized that the segment of the population responding is probably the more articulate, better situated Hopi. This will be seen subsequently from the occupations reported.

Incomplete Bureau of Indian Affairs figures indicate a total of 240 unemployed Hopis. On the basis of a work force of 900, this figure would indicate an unemployment level of 27 percent. When examined in more detail by the survey team, however, the situation is seen to be somewhat more dire. In the First Mesa area, the BIA figures for unemployed persons are 104. Excluding Keams Canyon, there are 276 families in this section of the reservation or an unemployment rate of 38 percent. In the Hotevilla area where there are an estimated 150 families, there are 71 unemployed persons for a rate of 47 percent. Figures for Second Mesa are incomplete due to the fact that village members refused to permit the study team to survey the Second Mesa area.

Thus, unemployment figures for the various Hopi areas range from 27 percent to 47 percent. Although the figures are not exactly comparable, they have a tendency to indicate that a number near 40 percent for total unemployment is probable. For example:

Midpoint of BIA range	38%
Average of all figures	39%
Median of all figures	41%

Only a small amount of employment is steady. Hopis in the employ of the Bureau of Indian Affairs or the Public Health Service enjoy relatively steady jobs. However, the great majority of Hopis on the reservation work only for short periods of time at such things as fire-fighting, road construction, and occasional jobs in surrounding towns as laborers.

Unfortunately, long commuting distances involved in reaching places of wage employment and the reluctance of many of the people to leave their familiar surroundings has created serious problems of unemployment with significant numbers of families enjoying no money income at all or relying entirely on various forms of welfare payments. Population studies conducted by the study team indicate that the

reservation population is remarkably young and the up-coming generation of Hopis will impose severe strains on the present economy and its limited employment opportunities.

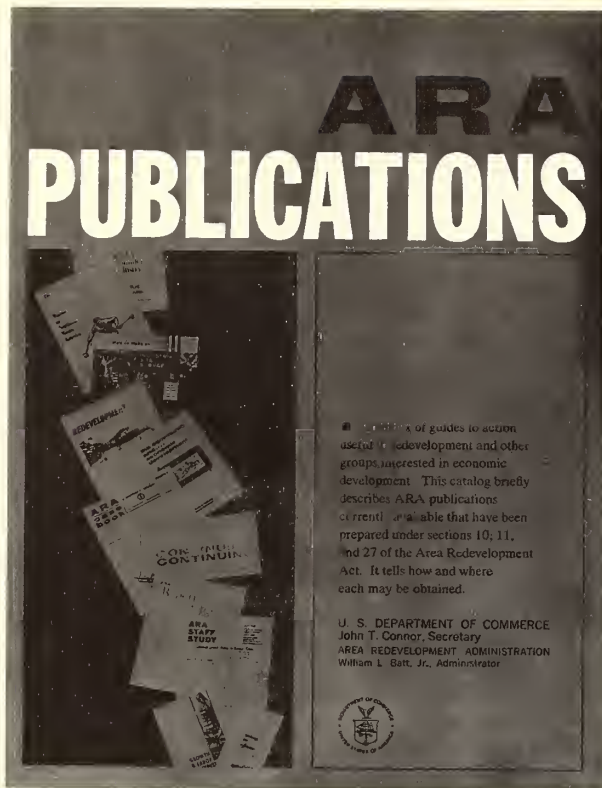
Thirty-six occupations were listed in the labor survey. While the coverage provided by the labor survey was small, the 36 occupations of the reservation Indians interviewed gave a fairly diversified picture of the opportunities as well as the skills available on the reservation. The 36 occupations included:

Barber	Mason
Bookkeeper	Motel supervisor
Chauffeur	Mechanic
Commercial artist	Nurse
Cook	Painter
Dishwasher	Policeman
Dormitory manager	Postmaster
Electrician	Printer
Elementary teacher	Seamstress
Farmer	Secretary
Forester	Service station attendant
Fork lift operator	Sheetmetal worker
Heavy equipment operator	Stationary engineer
Highway maintenance	Surveyor
Laborer	Telephone operator
Lab technician	Trader
Machine operator	Truck driver
Maid	Waitress
	Welder

The unemployment problem cannot be attributed to Hopi educational levels. According to the Arizona State Employment Service, nearly all of the Hopis are English speaking and many have completed high school. According to the survey, 25 percent of those interviewed had completed high school, 48 percent had at least one year of high school, and an additional 49 percent had completed the sixth grade. Only 3 percent had less than a sixth grade education.

With the exception of arts and crafts, the Hopi's special skills tend to correspond to his occupation. If a man's trade was welding, for example, he mentioned welding as a special skill. A little more than half a dozen respondents mentioned that they had training in commercial math or business courses. Special skill in arts and crafts work was fairly widespread, reflecting the stress on this activity in the schools and its cultural importance generally.

Hopi skills are adequate in kind and amount for the support of commercial tourism. As can be seen from the preceding list, the types of employment normally provided by motels, gas stations, and restaurants correspond to the skills available on the reservation. In fact, Hopis are the preferred employees at many of the larger tourist installations off the reservation, including the Grand Canyon. The opportunity for the employment of a few Hopis as managers or supervisors of various tourist activities is considered to be good on the basis of the training and educational levels observed.



ARA PUBLICATIONS CATALOG

A tool useful to redevelopment and other groups is the 16-page illustrated catalog of "ARA Publications." Copies are available on request to the Area Redevelopment Administration, U.S. Department of Commerce, Washington, D. C., 20230.

Here in one publication is a comprehensive listing of guides to action useful to communities in organizing and following through on economic improvement programs. While ARA publications are published to assist economically distressed areas, they have broad applicability and are useful to anyone engaged in economic development and redevelopment.

The catalog's 358 titles, covering a variety of subjects, describe ARA publications which are currently available. For convenience, the publications are arranged in sections, and in most cases are illustrated. Eleven categories are listed, as follows:

"Redevelopment"—An illustrated, 12-page monthly periodical that tells what redevelopment groups are doing to create new job opportunities,

relates actual experiences in economic improvement, and describes community redevelopment techniques that may be useful to areas with similar problems and resources. "Redevelopment" also reviews new ARA publications and comments on important changes in the policy and programs of the Area Redevelopment Administration.

ARA Pamphlets—(10 titles)—These pamphlets describe the legislative basis and operational elements of the ARA program and tell how designated redevelopment areas and firms wishing to locate or expand in these areas can obtain assistance provided under the Area Redevelopment Act.

Bookshelf of Community Aids—(11 titles)—These are "how-to" booklets which deal in the basics of area redevelopment, ranging from preparing and overall economic development program to attracting new industry.

Economic Redevelopment Research—(16 titles)—These reports are prepared under Section 27 of the Area Redevelopment Act, which calls for a "continuing program of study and research designed to assist in determining the causes of unemployment, underemployment, and chronic depression in the various areas of the Nation and in the formulation and implementation of national, State, and local programs which will raise income levels and otherwise produce solutions of the problems resulting from these conditions."

ARA Staff Studies—(5 titles)—ARA Staff Studies investigate specific topics of interest to redevelopment groups concerned with declining job opportunities in their areas and actively seeking new sources of employment.

Technical Assistance Studies—(8 titles)—Under Section 11 of the Area Redevelopment Act, technical assistance studies are made to help alleviate or prevent conditions of excessive unemployment or underemployment in both redevelopment and other areas. Results of these studies, while keyed to specific situations, may be helpful elsewhere under comparable conditions of problems and resources.

ARA Case Books—(11 titles)—These case books discuss the problems confronting individual redevelopment areas and how these areas are utilizing their resources to stimulate economic growth. The reports may be useful to other communities with comparable problems and resources.

ARA Field Reports—(29 titles)—Each field report, based on a visit of ARA representatives to a

designated redevelopment area, includes recommendations for further action to increase employment, improve the community, and strengthen the area's economy. These reports may be useful also to communities with comparable problems and resources.

Industry Location Series—(18 titles)—Two Statistical series (one in industry by State and county sequence, the other in county by industry sequence) were published from the Bureau of the Census 1958 Census of Manufacturers, and answers for each of 425 individual manufacturing industries: Where are the plants? How big are they?

Technical Assistance Studies on Interlibrary Loan—(67 titles)—Copies of technical assistance studies

prepared under ARA technical assistance contracts (limited copies), available on interlibrary loan from the Library of the U.S. Department of Commerce. These studies cover a wide range of topics, examine specific economic redevelopment possibilities of individual areas and provide useful information for other areas with comparable potentials.

Statistical Profile Series—(192 titles)—Two series of statistical profiles—SP and SPB—provide data on population, income, employment, industry, education and other subjects helpful to redevelopment areas in analyzing their resources and planning for economic improvement.

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